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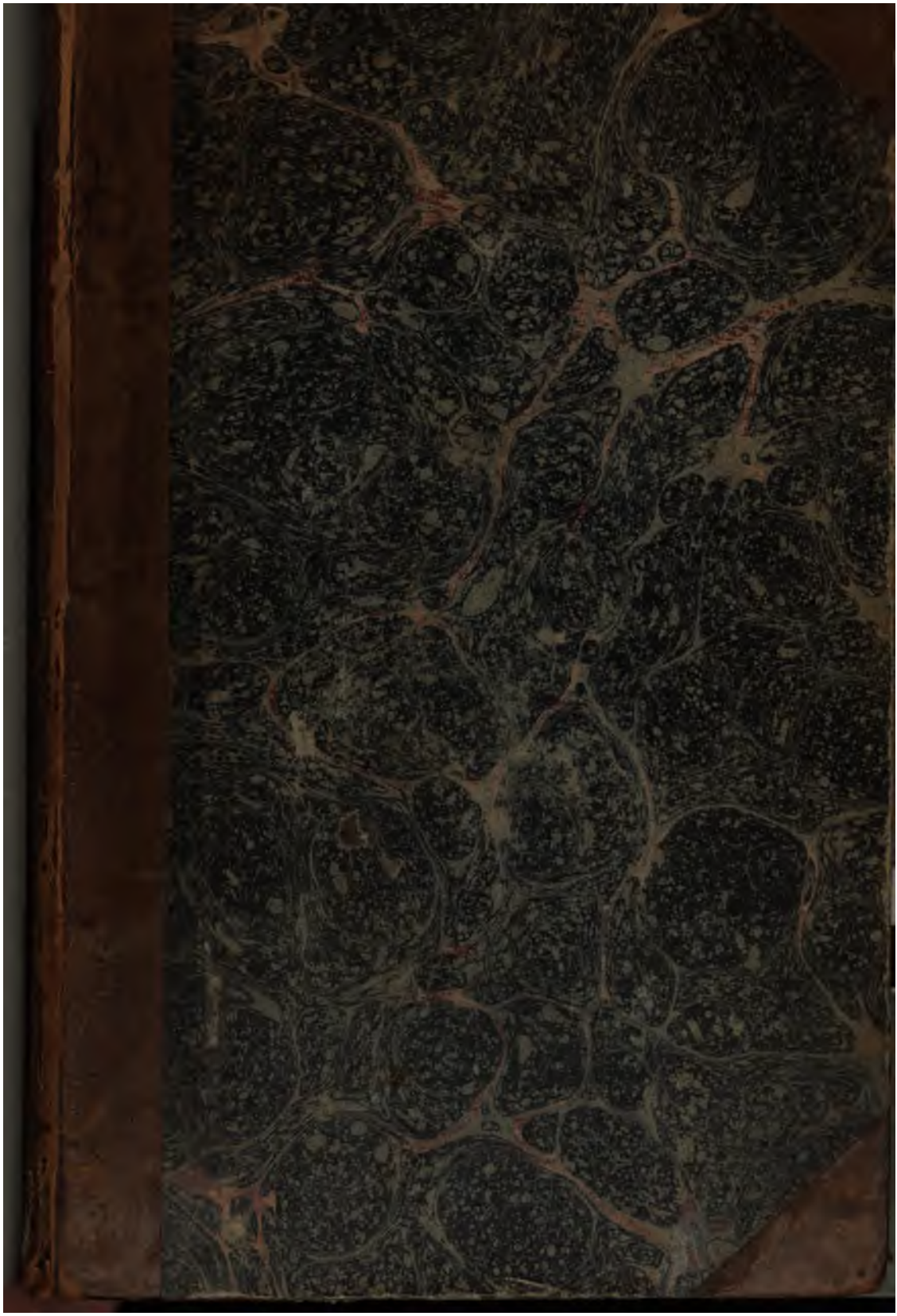

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THE

SHEPHERD'S GUIDE:

BEING

A PRACTICAL TREATISE

ON

THE DISEASES OF SHEEP,
THEIR CAUSES, AND THE BEST MEANS OF
PREVENTING THEM;

WITH OBSERVATIONS ON

THE MOST SUITABLE FARM-STOCKING
FOR THE VARIOUS CLIMATES OF THIS COUNTRY.

BY

JAMES HOGG,

THE ETTRICK SHEPHERD.

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TO

BRIGADIER GENERAL DIROM

OF MOUNT ANNAN;

AS A SMALL TESTIMONY OF ESTEEM

FOR A GENTLEMAN WHO HAS THE WELFARE AND

IMPROVEMENT OF HIS COUNTRY

SO MUCH AT HEART,

THE FOLLOWING TREATISE IS RESPECTFULLY

INSCRIBED BY HIS OBLIGED

HUMBLE SERVANT,

THE AUTHOR.

CONTENTS.

	Page.
Introduction,	1
Diseases incident to Lambs,	7
Diseases of Hoggs, or young Sheep,	17
Braxy,	ib.
Species I. Bowel Sickness,	20
II. Sickness in the Flesh and Blood,	24
III. Dry Braxy,	26
WaterBraxy,	34
Cures for the Braxy,	39
Best means of preventing it,	42
Hydrocephalus, or Water in the Head,	54
Pining, or Daising,	68
Diarrhœa,	71
Thwarter-ill,	75
Breakshuach, or Cling,	83
Scab,	93
Vermin,	99
Head-ill,	112
Blindness,	117
Outward Accidents,	120

Page.
Rot, or Poke, ... 126
Leg-ill, ... 163
Staggers, ... 166
Foot-rot, ... 169
Pelt-rot, ... 171
Dropsy, ... 173
Blast, ... 177
Wind, ... 180
Chill, ... 183
Red-water, ... 186
Erysipelas, or Wild-fire, ... 188
Memoir read at the Meeting of the Royal Medical Society at Paris, on the most prevalent Diseases of Sheep, by M. Daubenton, ... 190
Memoir on the most necessary Regimen for Sheep, by Ditto. 212
Account of the Sheep Pox, from the French of M. Vitet, ... 230
Essay on encouraging Sheep-Farming in some Districts of the Highlands, and Population in others, ... 252
Appendix, ... 325

INTRODUCTION.

If the most exalted and specious reasoning of natural causes, and their effects, on the animal frame and constitution, were of itself sufficient to throw a proper light on the causes inducing, and the best means of preventing or removing, a number of the diseases incident to sheep, the country is certainly, by this time, in possession of every thing that can be advanced on the subject. But as the most plausible theory often fails when reduced to practice, and as the most subtle and nice reasoning, on this subject, may tend more to amuse the fancy of the curious, and excite the wealthy to a few

experiments on a small scale, than to enlighten the eyes of the farmer, whose attention to the maxims laid down can only render them of national utility, therefore, in addition to what hath already been advanced, if a few observations, made by an illiterate person, during a life employed in the rearing and management of sheep, and who hath paid every attention in his power to discover such practices as tended most to ameliorate their evils, as well as those that proved most hurtful to them, he submits them to the public in the following pages, humbly hoping that the perusal will contribute to the cause of humanity, as well as to individual advantage, and national benefit.

It is evident, from the rapid improvement made of late years in our breeding stocks, that the farmers of our country need only to be convinced what scheme tends most to their interest, to put that scheme immediately in practice. But it is also plain, that the greatest part of those who have brought these improvements to the highest pitch, and

who, by a steady perseverance, have proved most eminently successful, are men nowise singular for their literary acquirements; and who, though they can communicate their sentiments with perspicuity in conversation, never once think of doing it in writing. It is thus that a great many observations are lost to the country in general, which, if once circulated, might be greatly improved upon.

It will perhaps ever be the case in many of the families in our country, who have arrived at opulence in this line, that the son of genius and abilities flies to some other more genteel employment, or ruins himself by speculation, while the low plodding brother, who was brought up behind the cows, accumulates riches, and, consequently, a great share of respectability, by following the honest and useful occupation of his fathers.

From a continual course of conversation with such men, assisted by daily actual observation, have I collected the following

hints, and with such, I hope, they will have more weight than those delivered to them in a more exalted style; for every one of them will be convinced, from experience, of the truth of some cases here mentioned that have fallen under his own observation, which will create an implicit belief in, and a steady attention to, the others.

For this purpose, I must be allowed to retain a homely and plain style, with the common phrases and denominations of sheep, herbs, and diseases; otherwise, I would be unintelligible to the very class of men to whom these hints can be of any use.

On such a topic, though I must proceed with candour and perspicuity, I may be allowed to be warm at times; especially, as I am convinced, that too much can never be enquired, nor written, about the means of preserving an animal, which is the great source of the riches and manufactures of our country, and for the rearing of which such a large proportion of it is almost exclusively fitted by nature.

That the diseases of sheep are numerous and complex is too well known; yet, from their extraordinary fewness on some farms compared with others of the same nature, and even on the same farms under a different management, I am often tempted to conclude, that they are naturally as free of them as the hawk or raven; and, were I able to define the various parts of the animal frame, their connection with one another, with the influences of climate and regimen upon each of them, I have no doubt but I should make it appear, that the whole of the diseases, to which this useful animal is subjected, might be traced to have originated in accidence, proceeding from improper usage or inattention in their keepers or managers. Soils and seasons have their influences, and that to a degree so extensive, as that they will never be entirely bettered; yet still they may, in a great measure, be guarded against. For my part, I anticipate, with exultation, the approaching happy era in the history of farming, when the *Rot* and

Braxy, which, in their respective districts, have raged like a pestilence amongst the woolly tribes, and buried the hopes of the husbandman with his bleating flocks, shall be as much eradicated as the small pox is, at this day, among the human race: For to what an extent has their rigour been abated, even in our own remembrance? On many farms, where they cut off annually about a sixth of the stock, their baneful influences are now scarcely felt.

OF

THE DISEASES

INCIDENT TO LAMBS.

THAT the diseases of sheep are by nature inconsiderably few, an inference, if not a proof, may be drawn, from the great difference betwixt the diseases incident to children, and those incident to lambs. With regard to the former, they are so very numerous, that one-fifth of mankind are computed to die in their infancy; whereas, during the time that the lambs subsist partly on their mother's milk, they are subjected by nature to no disease whatever. This may seem a bold assertion, when it is so well

known that many of them die during that period; but I declare that, during all my experience, I have seen very-few lambs die of any disease, saving those that could be well accounted for, as originating in accident, or the severity of the season.

As soon as they are ushered into life, numbers of the finer breeds are cut off by the *severity of the weather*. But it is plain this may be prevented; for, where a farm is not naturally well sheltered, artificial shelters may be raised at a small expence; but, indeed, the Scottish black-faced breed are so hardy, that, if they get a competent share of milk, no weather will beat them.

Again, when the lambing of the young sheep commences on the 15th or 17th of April with the rest, many of their lambs, in barren springs, die of *hunger*. This is occasioned either by the want of milk, or unkindness in the dam; but where the dam hath a sufficiency of milk, she very rarely proves unkind to her young. But to this the shepherd must be particularly attentive.

The lamb, a few minutes after it is lambed, will endeavour to suck; and, if he sees the dam repelling it, he must take hold of her, and examine if she have a sufficient appearance of milk; and if she have, by confining her a day beside her lamb, and causing it to suck her, she will become quite reconciled to the nursing of it in future.

If a black dot appears on the vent of the pap, and a redness all around the top of it, her paps are sore, and such are hard to better. The only thing that can be done, is to milk them with the thumb and fore finger until the milk begin to flow freely, then anoint them well with sweet oil, or butter, and confine them as above.

If the dam have only a small appearance of milk, a little cow's milk must be given to the lamb for a day or two, and the ewe put upon some more succulent pasture, the good effects of which will soon appear.

For this purpose, no sheep-farm should be without a few acres of fine land, enclosed and enriched; as it commonly saves more to

the farmer in one year than would defray all the expences attending it.

Others of the ewes, on having their first lamb, have a good appearance of milk, and yet have none. By good feeding, and constant sucking, the milk may be brought to them; but this false udder first falls gradually away, and then begins again to swell with true nutritive juice.

An active shepherd will easily discover the lamb's danger from any of the above circumstances; and, exclusive of the lank and hungry appearance of the lamb, let him attend to this general rule:—That whenever he sees a lamb constantly sucking, or endeavouring to suck, he may conclude all is not well, and the ewe must instantly be looked to; for, as long as the lamb retains any strength, it continues unceasingly to persist in craving the privilege which nature has taught it to expect.

Where a failure of milk on the young ewes or gimmers is dreaded, the farmer ought to keep them from the male until a

season corresponding with that, in which vegetation is so far advanced as quite to remove that obstacle:—Young lambs are better than none.

Another cause of many a lamb's death is what we call *pinding*. This is most dangerous when the ewes are in high condition, and vegetation backward; the milk is then strong and thick, and the excrement of the lamb becomes of a gluey nature, and lays hold of the tail and buttocks, which, by the heat of the sun, are pasted so close together about the fundament, that all possibility of evacuation is prevented, and the creature bursts in a short time. An attentive shepherd may easily prevent this, by loosing them, and rubbing them with friable clay or dry mould, which prevents them from fastening again. Some of the males will likewise fall, during the first ten days of their life, of an *inflammation in the bladder;* but this never happens but in cold barren weather, when they lie too long in one place, and cannot think to rise. This must like-

wise be looked to by the shepherd; and if he comes to a lamb weak or exhausted by any of the above, if it fall a trembling, it is sure to recover under proper attention. During the month of June, a few lambs in a flock will sometimes be infected by a *stiffness of the joints*, occasioned by the low state of the dam at that time. The animal then waxeth very fast, and if, for want of proper nourishment, its growth is stunted, the joints swell and grow up; but they generally recover. A straggling lamb will sometimes die during this period, of a kind of sickness occasioned by mixing some kinds of grass too freely with the milk; this is called by shepherds the *grass-ill*. Though merely accidental, it is impossible to prevent it; but it seldom occurs, and is never destructive. The only other cause of the death of lambs, is in consequence of *gelding the males*. To prevent this, care should be taken that it be performed at a time when the air is free of electrical fire. Heating of them, too, is

very often fatal; and the operator must, by all means, abstain from spirituous liquors.

When the lambs are very fat and strong, some farmers anoint the two vacuities in the scrotum with oil of turpentine; one standing with a vial, and anoints with a feather every lamb before it is set away. This is a severe remedy, but it is a sure one, as it repels the effects of the electrical matter on the inflamed parts. It however stops the growth of the lambs for a fortnight; therefore, if the folds are clean around, the weather not sultry, and the lambs gently used, there is no great risk without it.

When the lambs are taken up to be cut, they should never be catched by the back or flanks, or any other part except the hough or neck, and lifted gently up by the legs. The operation ought to be performed as gently as possible, by slitting up, or cutting the scrotum with a sharp smooth-edged knife, and starting the testicles by pressing both hands against the belly of the lamb. In removing them, the chords should be

taken between the fingers and thumbs, while the backs of the hands are still kept steadily against the belly, and the stones drawn with the teeth somewhat upward until they separate. The operator must then pull its tail sharply two or three times, to replace the chords and vessels which have so violently been disarranged, and if it be necessary to hold it still for the purpose of earmarking it, the hind legs must no longer be kept up than the operation of gelding is over, but immediately let fall.

If there is to be great loss from the operation, it will be evident the second day; but the greatest mortality is on the third and fourth after they are cut, and if the deaths are very numerous, they will continue to occur for six or seven days. The carcases are absolutely putrid in the hinder parts; and, when once the mortification begins, nothing will check its progress. It is a curious fact, that when the putrifaction comes to a great height in a flock, both tup-lambs and fe-

males will die infected in the very same manner as those that were castrated.

These are the only inward diseases, or rather accidents, of which lambs die; to outward accidents they are exposed in common with all other creatures. But in a country where there are so many thousands of them, and when it is considered how tender they are, and how many accidents attend them in feeding, herding, and folding, is it any wonder that stragglers should at times fall, whose death cannot be accounted for? But in every stage it will be seen, that sheep must be taken care of, and the more care and pains, the more profit to the owners.

When a ewe loses her lamb by any of the above accidents, if there are any spare lambs on the farm, of which there are commonly plenty in a good stock, another lamb may easily be given to her by the following simple stratagem:—Take the skin of the dead lamb, and fasten it tightly around that which you intend giving her; confine them

together in a dark corner, on a space of four feet diameter, and in twenty hours, or even sometimes less than the fourth of that time, she will be quite reconciled to it, and acknowledge it as her own all its life, often with more fondness than she showed to her own offspring.

OF

THE DISEASES

OF

HOGGS, OR YOUNG SHEEP.

BRAXY.

DURING the rest of summer, and harvest, it is very rare that any of them fall, until about the middle of October, when the Braxy, or sickness, begins to make its appearance on some farms. This universal ravager of the young flocks, through all hardy districts and farms in the nation, sets in early or late, in proportion as vegetation ceases early, or continues until a later period of the season. This is now perfectly well ascertained, and generally acknowledged; and, likewise, that all kinds of food which

preserve a continual vegetation are effectual preventatives; such as clover, turnip, sea-marsh, and the dark-coloured tath that grows in abundance on drained ground that has formerly been marsh. This last being so green and soft, and continuing to vegetate at all seasons when the weather was mild, induced many people to believe, that it was of a flatulent nature, and would increase the malevolence of the Braxy: But experience soon evinced the contrary; and that in proportion as this grass was nourished by the prevalence of the draining scheme, the Braxy by degrees evanished.

Before speaking farther of this disease, it may not be improper to apprise the reader, that it is of four different kinds; at least, if the *Water-Braxy*, mentioned by the Reverend Mr Finlater, be admitted as one of them: But of all these we shall speak distinctly.

In two of them the difference is only discernible on opening the carcase, when it appears differently infected in the one from the other. But they have both the same

symptoms; both the same effluvia when dead; and both proceed from the same cause; namely, indigestion. But, in one, the stomach and intestines only are principally infected, while a small part of the inflammation only is communicated to the flesh. In the other, the fleshy parts are all swollen and corrupted, while a small proportion only of the inflammation is communicated to the stomach and bowels. Such of the sheep as fall of this disorder in the spring die generally of this latter description.

These are facts; but to discriminate nicely betwixt the different germs of the infection would require one better versed in the construction, connection, and names of the several parts of the animal frame than I am; though it is probable, that the one originates in a stoppage in some of the blood vessels, and the other in a stoppage in some parts of the bowels; but however that is, they are certainly both consequences of indigestion.

I shall first state the causes of this indigestion, and then point out some of the best means of preventing it; for that it may, in a great measure, be prevented, I positively affirm, as well as all other diseases to which sheep are rendered liable: And to these causes I beg the shepherd's attention, assuring him, that, on being attentively considered, they will seldom or never, in one instance, be found to fail.

SPECIES FIRST.

BOWEL SICKNESS.

It is well known, that about the middle of Autumn, if not sooner, such lambs as are pastured by themselves are gradually let into richer pasture, which hath been preserved for them during two or three of the preceding months; which practice is very lauda-

ble, as it puts the young creature into good condition before the winter commences. As long as the weather continues soft, if left to themselves, they fail not to take immoderate fills of grass; and, as this is never attended with any immediate bad consequences, they are too commonly suffered to take their will.

Now, the reason why this has no bad effect in the mean time is, because vegetation still continues to push forth the sap of the earth into every green blade and stem; and, besides, the lambs (or hoggs, as they then begin to be called) always settle on the richest parts of the pasture, which being of a succulent nature, and easily digested, consequently the creatures remain, to all appearance, unhurt for the present, as they certainly would, were a continuation of the same weather, and the same food, always attainable. But, sooner or later, the frosts must commence, and, frequently enough, very suddenly; then the mountain grasses close at the root, and not only become of

themselves more dry and astringent, but the difference in the temperature of the air acting upon the bodies of the animals, induces them to search after, and feed more upon, heath, bent, and other herbs of a more hardy and hot nature than those that they lately delighted in to such a degree. Now, the stomach being, at this time, much racked and distended by its constant repletions for some time past, is rendered in a manner callous; and the sudden change in the atmosphere, from a moist to a keen sharp air, creates in the animals such a sharp appetite for these dry hot herbs, that they devour them with great voracity, and take a fill of them equal to what they took before of the soft succulent grasses. The former being as costive and hard of digestion as the other is soft and easy, the consequence is now easily seen through; at least, by a man of science, this hint may easily be improven to a full survey of the distemper in all its stages: but as it is easier for me, who am no anatomist, to conceive than describe, I shall not

follow out its process further for fear I make a fool of myself, and they who do so get many to help them.

That the above is the very cause of that Braxy which hath cut off so many thousands of excellent young sheep, not the least doubt need to be entertained; and the shepherd is satisfied with knowing perfectly well that it is so, without troubling himself farther about the matter. Any shepherd will tell you, that it is always on sudden changes from fresh weather to a frost, that its ravages are most felt; and so much are they aware of this, that I have frequently seen them, on such mornings, put on an old hat and old clothes in order to carry them home, not doubting in the least but that some of them had fallen a prey to it. The stoppage, which causes the inflammation in this case, I conceive to proceed from wind in and about the stomach, occasioned by the plentiful mixture of these so very different foods, as the mortification is confined to those parts, and seems to commence about

the vent leading from the stomach, or in the crook of the reid, where the aliment is finally concocted.

SPECIES SECOND.

SICKNESS IN THE FLESH AND BLOOD.

The next that I shall mention, is that which differs from this last only in the appearance of the carcase on dissection; for besides having, as I said before, the same symptoms, and the same strong effluvia when opened, they are carried off by it in the same short space of time. In this case, the inflammation, instead of commencing about the stomach, takes its rise about some of the most fleshy parts of the body, and seems to be the consequence of some air getting into the veins. However that be, it is certainly occasioned by a sudden change

of food, and the temperature of the air; and is the same trouble with that which prevails amongst the young cattle in the west of Scotland, and is denominated the *Black Spauld;* and it is a well known fact, that this likewise sets in at the same season, when the grasses fail, and the cattle are begun to feed on fodder and dry herbage.

Stragglers will die thus infected, when hoggs are dying fast of the former case in the same flock; and all the old sheep which die, as well as the hoggs which fall in May, are carried off by this species. It is, however, to be remarked, that these are but very few, and its ravages may be computed as no more than one to ten of those that die of the first case.

SPECIES THIRD.

DRY BRAXY.

The third is a kind of Dry Braxy, and can hardly be said to proceed from indigestion. It makes its attacks during storms of snow, when the walk of the hoggs is much circumscribed, and when they are confined too much to the tops of heather, bent, and other dry sapless food; but it only seizes on such as have plenty of grass when the weather is soft. On dissection, the bodies of the animals dying of this species are considerably different from any of the other two; the carcase is much less swelled, and not nearly so blue and putrid; the stomach is scarcely infected in the least, but the small therms are mortified, black, soft, and almost rotten. The inflammation visibly beginning in one of the latter folds of the intestines, and certainly proceeds from the following cause.

The fæces, by the time it reaches thus far, is quite drained of all its nutrimental qualifications; but, in proportion as the animal feeds on dry costive food, the purl becomes more hard, and is collected into larger lumps, consequently, the spaces between these clumps must be longer. Now those hoggs which have, from the time they were weaned of their mothers' milk, been accustomed to feeding on this soft easy food, the entrails become narrow in proportion to the smoothness and conformity of the excrement passing through them; but on an entire change of this into stiffish lumps, with a void before and behind each of them, a twist, or intussusception, is sometimes occasioned in one of the folds, which immediately puts a stop to all passage from the belly, and causeth the inflammation; or, perhaps, one of these clumps, sinking into the vacuity immediately below it, is productive of the same disagreeable effect.

I acknowledge that this is only conjecture, arising from the notoriety of the inflamma-

tion beginning in those parts; for, with all my care, I could never discover the twist that had occasioned the animal's death, though, from the mortified state of some part, it was visible where it had been. I had almost forgot to mention, that, in one or two instances, I perceived a small double in the intestines, which, by some wind passing through them, had forced its way through the thin texture that covers them, and by which the fat hangs. This was full of wind, quite black and mortified, as were sundry of the folds above it.

Such hoggs as are infected by this kind of Braxy, sometimes linger on a day or two in great agony, and only appearing a little swelled; and, as it is on such that a great many of the cures are tried, it is the less wonder that so few of them prove beneficial, as it is certainly very difficult of cure.

Mr Little's Opinion of Case Third.

Mr Little, with whom I corresponded on this subject, in one of his letters to me, hath

the following technical observation, which I shall transcribe; for though it seem to overthrow this theory, yet, as I do not perfectly understand it, it may be right for any thing that I know.

"The more I reflect on your theory of the causes inducing the sickness," says he, "the more I am disposed to attach implicit credit thereto; because, on a retrospective view of past events, I find that it tallies exactly with a number of cases and circumstances which have come under my own observation. But I am not very well satisfied with your statement of the third case, though perfectly so with respect to the cause of it; which I know very well proceeds from their feeding too much on dry sapless food in times of frost and snow, when they are confined together. This species of the disease is more destructive in many places than you seem to be aware of; and I do not believe that it originates in a stoppage of the fæces through its intricate windings amongst the latter folds of the intestines. I rather think

during the time of its fermentation in the stomach, is not productive of so much liquid as is sufficient to dilute it properly upon farther mastication. And the animal frame being like a well finished machine, wherein one wheel always sets another in motion, all the curious operations of nature, in the concoction of the regimen into chyle, are immediately marred, and the wonderful powers of the stomach laid dormant. The consequence is, that severe cholic pains instantly ensue, which, if timeously attended to, might, by bleeding, anodynes, and sweetening injections, often be expelled; but which, if suffered to proceed, must necessarily terminate in an inflammation, and the death of the animal."

Before proceeding further, I may remark, that all these three are visibly different species of the same malady, of which the smell itself is a sufficient proof; and that, of all others, which has any resemblance to it in this particular, is the flesh of such as die awald, which, for smell and taste, might

be mistaken for it; for the Braxy is the great purveyor for the tables of the farm servants.

The first visible token of this distemper, which is alike applicable to all its cases, is the animal's ceasing to chew the cud; which it does sometimes for several hours before any thing else can be observed to ail it.—This leads to a reflection on the curious operations of nature in the stomach of a sheep.

When the grass is first swallowed, it descends into the maw, or paunch, where it is found in large quantities, nearly as it was pulled. When they are feeding full, ten, and even twelve pounds weight of this stuff is sometimes in a sheep seven months old. Out of this first stomach it has the power of bringing it up for further mastication, and it would appear, that that which is lowest and first swallowed must come up first, else it might lie there for years together; and how this is effected, when such a mass of crude and heavy matter intervenes betwixt

that and the throat, is not easily to be conceived. The maw, or first stomach, of such as die of the Braxy, species first, is always distended to the last degree with foul infected air; and, were it not that this is never so much inflamed as the last stomach, it might be conjectured, that a species of the distemper originated in the animal's previously losing its cud. I have seen old people, who, when a cow grew sick and lost her cud, took one out of another cow's mouth, immediately after it came up, and put it into hers which was sick, and after she had chewed and swallowed this two or three times her own was restored.

A cow which dies of a surfeit of clover, has the same appearances, on dissection, as a sheep which dies of the sickness, species first.

The loss of the cud is, I say, the first token. As the distemper advances, the agony which the animal is suffering becomes more and more visible. When it stands, it brings all its four feet into the compass of a foot;

and sometimes it continues to rise and lie down alternately every two or three minutes. The eyes are heavy and dull, and deeply expressive of its distress. The ears hang down; and, when more narrowly inspected, the mouth and tongue are dry and parched, and the white of the eye inflamed. The pulse beats strong and thick; the breathing is not very short, but attended with panting and seeming difficulty: The urine is high coloured, and the blood dark and thick.

In all these cases the kidneys are terribly infected, and reduced to a flat jelly resembling putrid gore, and the natural consistency of the liver is also much spoiled. In the first case, the belly is prodigiously swelled, even so much that it sometimes bursts. All the stomachs, or rather all the different apartments of the stomach, are inflamed in some degree, and all in the same proportion; but the first always least, and the latter, or that next the intestines, most, which is often quite putrid. In the second, the

whole body is hoved and swelled like a loaf. The liver in this case is extremely putrid, and the ventricles of the heart full of congealed blood, and a livid redness pervades the whole body and bowels, and the forethighs are commonly worst. In the third case, the belly only is a little swelled; the chewed grass in the maw is very stiff and almost quite solid to feel upon, and the flesh is not greatly tainted.

WATER BRAXY.

Let me now attend to the *water braxy*, mentioned by the Reverend Dr Findlater. Many people hold this as merely chimerical; and assert, that it never had existence saving in the doctor's brain. I was much of the same opinion myself, but I am now perfectly ascertained of its existence, having seen and dissected several of them, and am

likewise assured, that it does considerable damage on some particular farms; but whether it is indeed a species of the braxy, will admit of a doubt, though it is always viewed by the shepherd as such. In two outward symptoms it has a resemblance to it which may occasion this. The first is, that the animal, when living, appears affected much the same way,—lying frequently down, and loitering behind,—and likewise appears somewhat swelled. And the next is, that, like all others affected by the braxy of any kind, it will not bleed to any extent on opening a vein. The cutting of a vein in the tail, spauld, or below the eye, will make other sheep bleed plentifully; but from these scarcely a drop will issue; and even on cutting the principal vein in the throat, only a very small quantity proceeds.

But, in the interior, they differ very widely. On opening them, the whole entrails are swimming in bloody water, none of which is within the guts, but only within the

rim of the belly. The gall-bladder is very small, appearing as having been mostly spilled previous to its death; and the urinal bladder is contracted and shrunk up to a size scarcely noticeable. The small fibres, connecting it with the other parts, are inflamed; and, on bringing it near the nose, smells somewhat like the other braxy. The bladder seems entirely to have lost its power of absorption, no urine being ever within it; but, on blowing it up with wind, it is always quite sound, and never bursts as the reverend doctor alleges. The guts and flesh are a little discoloured, and have a smell peculiar to that disorder. The smaller apartment of the stomach, or reid, hath some purple spots on it; and, on being felt with the hand, these are thicker in the texture than the other parts of it. They seem to have bled a part inwardly; this, some suppose, issues from the liver.

There is another rare distemper called the *yellow sickness*, which I do not at all consider as a species of the braxy, but rather a

sort of jaundice. They pine in it for some days, and are very sick. The entrails, on dissection, are of a dark yellow, and have likewise a smell, peculiar to that distemper, flavouring something of sulphur. But this is a disease peculiar to old sheep; and, had it not been for the name, ought not to have been mentioned under this head. Such sheep as feed upon woody banks are most subject to it; and I always consider it as proceeding from their eating some poisonous herbs. There is always a sort of congealed stuff like rotten eggs about the kidneys.

This disease, I am told, prevails to a considerable degree amongst some of the fine English breeds. The outward symptoms are strong convulsions, accompanied with shivering at intervals; yellow eyes and urine; and, on dissection, besides that the whole body and entrails are covered with an ugly yellow, the gall-bladder is distended to three times its ordinary size, and that part of the liver to which it is attached, dyed

quite yellow. . There are often hard lumps upon the liver, and others adhering to such of the entrails as are nearest the back. From some of these symptoms it would appear, that it had some resemblance to a bilious complaint; but it not being very common in such counties of Scotland as I have been any way conversant in, I have not been able to certify, whether a plurality of diseases is included under this general name, or if the *yellows* and *yellow sickness* have been originally considered as different diseases.

CURES FOR THE BRAXY.

As to the cures for the braxy, although those that have been, and are yearly and daily tried, are almost innumerable, yet the most that can be said about them, is to describe how completely they have all failed of the desired effect. Were I but to enumerate those which have come even under my own observation, I would have a tedious muster-roll of names, without having the authority to affix the title of *effectual* to one of them.

An advertisement appeared in our papers last year, holding forth, with great pomp and assurance, the extraordinary virtues of *mustard* in removing it; but, of all the cures that ever have been tried in this country,

the effects of this hath been the least salutary. One in twenty hath not lived to which it hath been administered; and one of the Messrs Anderson's of Meggat told me, that it had killed some of theirs which they were not sure were infected with the sickness. It may certainly be presumed, that a preparation of a nature so hot, is not a cordial fitting an inflammatory case; or, at most, it is a desperate remedy, which may cure, but hath ten more chances to kill.

The only cures which I can freely recommend are in every shepherd's power, and are as follow:

First, if the animal is found in time, let him give it a severe heat by running; if this do not cure it, nothing that I am acquainted with will. However unfavourable this may appear, let him hunt it well, and follow after it that it lie not immediately down on leaving it; or, if it will lie down, let it be in a house. Many shepherds have

discovered this by chance, who yet are ashamed to be the first to acknowledge it.

The next is bathing amongst warm water for the space of eight or ten minutes at least, when a quantity of water gruel, mixed with butter, or some softening ingredient, may be given them as an injection, or otherwise.

Care must be taken, however, that none of these is administered for the Water Braxy, because either of them occasions instant death: The bath makes them bleed inwardly, and die forthwith; neither is a chace productive of any good to them, but evil. If you get hold of it, this is easily discovered, by putting both hands to its belly, and working them with a quick vibration, when, if it be the Water Braxy, it will jumble; but, if it cannot easily be got hold of, you may guess by the appearance of the swelling, which, in the common cases of the Braxy, rises on each side of the back, but in the Water Braxy hangs low. But in all cases bleeding is good; and if they bleed

freely, or by any means can be made to purge freely, there is great hopes of their recovery. These have been *oftener* attended with success than any I have seen tried. But cures for the Braxy are of small avail; for, besides that most of them fail, the greatest number of the hoggs which die of it, are found dead in the morning, without any thing having been seen to ail them on the preceding night.

Let us then attend to that which is of infinitely more consequence, namely,

The Best Means of Preventing it.

To this I earnestly intreat the farmer's most serious attention; and the first thing to which I would enjoin him is, to take particular notice what number of sheep his ground is adequate to feed properly, to stock it accordingly, *and pasture the young and old*

of his flocks all together. By this plan, the Sickness, or Braxy, is almost totally eradicated wherever it has been introduced; for the young of the flock follow after and share the experience of those that are old, both with respect to what food is proper for every season of the year, and time of the day; and gain much by feeding along with them for some hours every seasonable night, when they would otherwise have been lying fasting, and so hungry next morning, that they are apt to wrong their stomachs, by eating too freely of any thing that comes in their way. By thus rising in the night, too, they are enticed both to pass urine and dung, by which the Water Braxy is totally prevented from attacking them, and a stumbling block laid in the way of the others.

By this plan, also, the ground is much more equally stocked, and every corner of it more equally eaten. No straggler will wander from the farm; and the sheep feed ten times easier, and neither waste them-

freely [illegible] by being driven to
purge [illegible]
recov[illegible] thoroughly considered,
c[illegible] that this is the best means
[illegible] Braxy that hath yet been
[illegible] the farmer who once tryeth
[illegible] again change it for any other

[illegible] it a little more plain: Let the
[illegible] the ewes of each distinct hill,
[illegible] ridge, and, about the middle of Ju-
[illegible] from each of these divisions of the
[illegible] lambs, a number sufficient to replace
the aged, infirm, and eild of that certain department. Let these be kept in a parcel by themselves, or with the eild sheep, until the milk is gone from the ewes, and then turn them again at large to pasture, with the old sheep, on each his own native hill all the rest of their lives; for no sooner are they set at liberty, than they draw to their respective places, and commonly again join their dam and former acquaintances. Thus, in a few years, every little department of

the farm becomes stocked with a distinct clan of friends, who will in nowise separate; and though they be ever so thoroughly mixed with other clans during the day, they will all sunder voluntarily, and draw to their own layers at even.

Though this system of herding, as well as the draining of sheep pasture, were introduced here by a very singular character, viz. Mr William Bryden, senior of Riskinhope, who possessed land, for a great number of years, under his Grace the Duke of Buccleuch, yet the benefits which have been reaped from both are unspeakable; and I have no scruple in declaring, that they are the first and best means of preventing the Braxy.

But as this plan is not eligible in every instance, and where great numbers of wedder hoggs are kept for sale or otherwise, it is necessary, to prevent confusion, that the hoggs be pastured by themselves. Let such tenants and shepherds attend to the following observations.

[illegible] country, that all kinds of [illegible] give a continued vegetation [illegible] for this malady, and, where [illegible], a retreat to them is of- [illegible] quality; but where they are not, [illegible] the case, let the farmer take [illegible] in the first place, *to choose his hogg- [illegible] a part of the farm which consists, as [illegible] possible, all of one soil.* I have tra- [illegible] through a good many of the pasture [illegible] of Great Britain, and have taken [illegible] pains to enquire concerning this, and I aver, that on such a pasture the Braxy is never destructive. It is no great matter whether the soil is fine or coarse, providing it be all the same. It is but stocking it the lighter; and sheep will thrive as well upon coarse land as upon that which is fine, if there are few or no sweet spots interspersed through it, which attracts their taste, and keeps them hanging upon such.

To such a walk the constitution becomes adapted, and they continue to take regular meals of it, during all kinds of weather.

The same observation holds good with respect to any parcel of sheep, of whatever age or denomination, as also in the choice of a farm.

A flock, whose range consists chiefly of one kind of soil, seldom miss being equal, and in good condition; while those whose walk consists of soils, of which one half is fine, and the other coarse, very rarely are so. The reason is obvious. They never fix upon the coarse part until the fine is so bare that they can make no more of it, and even then the former goes but very ill down with them. Neither does stocking light do much for them; for still they will have the fine finished before they will settle peaceably upon the other, and often continue to gnaw upon it until part of them are quite wasted.

But, of all soils in the world, the kind that is most destructive in raising the Braxy, is that on which lee-heather grows; that is, where heather grows upon a mould or gravelly soil. If it grows upon a mossy turf it

is not dangerous, and wearing them upon such will often very much abate it; but as to the former, every person, who has had any experience in the line, will allow of its malevolent tendency in promoting this distemper. Some apprehend, that it is the heather itself; and others, that it is the long foul grass that is nourished about its roots; but the truth seems to be, that it is partly both. Such heather commonly grows in bushes, and the grasses about these are of the most soft and delicious kinds; while, on the other hand, this kind of heather is remarkably strong and hot:—Thus it is easily accounted for, without deviating in the least from my former theory.

If such ground, however, is unavoidably situated within the bounds of the hoggs' winter pasture, care should be taken, on the first opportunity that offers, to extinguish every bush of it by fire, which will at once convert it from an incentive to a preventative; for the young sprouts which grow upon burnt ground, being of a tender and de-

licate nature, are generally laxative and easy for the stomach.

I wish the utility of burning the land were better understood in Scotland, where in many districts it has been woefully neglected, though it is certainly the best, and often the only improvement that can be practised on muir-farms. A part of heather is very beneficial, especially on the land where old sheep are pastured; but if it can be eradicated, or kept down, so as to have only one-eighth of the walk covered with it, it is quite enough; and where hoggs are pastured, all the lee-heather should be carefully extinguished. There is no one improvement which might be conducted more systematically than burning, and yet there is nothing done more carelessly. It is true the game-act restricts the farmer from burning any muir after the 10th of April, which is often a great loss to the nation; for, if the weather proves wet previous to that term, the mosses and muirs must remain in their natural rough state for a whole year, which

contributes greatly to reduce the condition of a large proportion of sheep in Scotland. Certainly an indulgence should be granted to the farmer in this case. I have heard Mr Laidlaw of Blackhouse aver, that rather than miss a year's burning, he would lose L. 50.; at that time he only kept 2000 sheep. Now, when it is considered, that a great proportion of the pasture-farms in Scotland have much the same appearance with his, is it not a moderate computation to suppose, that the country almost insensibly may lose, in wool, sheep, and condition, L. 50,000? while all the loss that would accrue to it, on account of the muir-fowl nests that might chance to be burnt, would not exceed five shillings!

That the shepherd may know better how to proceed with the burning, let him take notice, that where heather is extinguished by fire on a clay or loamy soil, it will not sprout again, so as to cover the ground, for twenty years; but, if on a hogg-fence, at the expiry of twelve years, the surface, that was

before covered, will again be mostly overspread. If it is a gravelly soil, the one half of the above terms may be considered as the epoch of its return. If the soil is a mixture of moss and gravel, the half of that again; and if the soil is entirely moss, it grows again that very same year: Consequently, the shepherd should in the three former cases keep a regular rotation of crops, and burn his ground in such a manner, as to have always a proper proportion of it young, old, and middle-aged; which is likewise the best method for fostering the game; for the sportsman will easily discover, that when there is plenty of young heather on the farm, he will rarely find any game amongst that which is old; but, in the latter case, with regard to moss heather, it should always be burnt as soon as it will burn; for, of all foods, none are more healthy and nutritive than young moss-heather, ling, and deer-hair, and none are more useless when old.

The only other preventative which I can

freely recommend after these, is the method to be used in the herding of them. Let them be stopped on the upper parts of their pasture for two hours in the morning; and, by all means, let them not be suffered to remain too late on the grassy parts below, but, about nine o'clock, again put in motion outward, that the stomach may not be impaired by too immoderate fills of this soft grass. The shepherd should always remember, that frosty and variable weather is approaching, and if he be not careful to act thus, the above mentioned consequences will be apt to ensue. It will likewise add to this security, if, when setting them outward, he makes them run a small way, as it induceth perspiration, causeth them to evacuate dung, and rest themselves awhile to chew the cud.

On some farms where the Braxy hath been very destructive, the farmers have, by bleeding the whole parcel of hoggs in the jugular vein, taking about two ounces of blood from each, considerably abated its

ravages. This was always performed about the beginning of November.

These certainly are the best means for preventing the Braxy, or sickness; nor do I believe there is any other, exclusive of these mentioned. They have indeed got a foolish tradition about Annandale, that, in former ages, when sheep were so few, as to be all housed during the night, the Braxy was unknown; but facts are always the best foundations to build upon, and I have seen many instances of domestic sheep, called pets, dying of the sickness; and, in the counties of Ross and Sutherland, where many of the small tenants house their sheep every night of the year, for fear of the foxes, the Braxy rages with uncommon severity.

OF THE

HYDROCEPHALUS;

OR,

WATER IN THE HEAD;

ALIAS

STURDY.

THIS is the next disease which attacks them, and is commonly known by the latter denomination. A sheep affected by it becomes stupid; its eyes stare, and fix upon some different object from that which it is in fear of. It soon ceases from all intercourse with the rest of the flock, and is seen frequently turning round, or traversing a circle.

As to the causes inducing it; it is universally allowed, that it is occasioned by sheep being exposed too much to rough and boisterous weather, without any shelter. It would likewise appear, that the water is ejected into the brain by the spinal marrow; but whether it is a certain internal distillation, or admitted from without from the serosity of the skin, is not so easily determined. Certain however it is, that a bratted sheep (one whose back is covered with a piece of cloth) will not take it; and, of a well-sheltered flock, very few ever will.

The water settles sometimes in one corner of the skull, sometimes in another; but, whenever it begins, it continues to increase and gain upon the brain, until it is either extracted, or the animal so much wasted, that it dies as lean as wood, at which period the brain is commonly half wasted away, and the skull full of these noxious fluids. Sometimes it concentrates in the very middle of the brain, when it is very difficult to cure; and sometimes in the

hinder parts, where it joins with the spinal marrow, when it is quite incurable. If this water is not extracted by some operation, the disease invariably terminates in the death of the animal; and though the operation, whatever way performed, is extremely simple, yet thousands are suffered to perish, through mere carelessness or diffidence. In whatever corner of the brain the water settles, the skull immediately above it soon grows quite soft, and the shepherd, by groping with his thumb, will easily discover where it is seated. If it is anywhere in the crown, the gentlest way is to tap it in the place where the skull is soft, and let the water run out. This is commonly performed with an awl, or large corking pin, although an instrument with a small tube in it, might easily be made, which would drain it off more completely. Since writing the above, the author hath received a small silver trocar from Dr Duncan, jun. Edinburgh, invented by him, for the purpose of draining off the fluid, in whatever part of the

skull situated, and has little doubt of its final success. By this operation, if the instrument is not pushed too far, the animal is nothing the worse, whether it recovers at the first, or not. But, what is very remarkable, this plan is not successful on all farms alike, of which I have known many instances. There is an old shepherd on the farm of Mounbenger, named William Cowan, whom I have often heard declare, that, in a course of thirty years experience, one sheep out of twenty which he had tapped, had not died on their own farms; while it was very rare that he could cure any on some of the neighbouring farms. He performs it always with a large corking-pin. But, if the skull feel soft in the forehead, then the operation must be performed by thrusting a stiff-sharpened wire up each nostril, until it stop against the upper part of the scull. If this cure were not well authenticated by daily observation, it might seem a very severe and dangerous operation, as the wire goes quite through the brain in

two different places; yet a far greater number are cured by this way than any other. The operator must feel for the part of the skull that is soft, and lay his thumb flat and firm upon that; then taking the wire in his right hand, push it up that nostril that points more directly for the place that is soft, where the disease is seated; and if he feel the point of the wire below his thumb, he may rest assured that the bag is perforated, and that if the brain do not inflame, the creature will grow better; but if he does not feel the point of the wire press against the soft part of the skull, on which the thumb of his left hand must be placed, it will be necessary to try the other nostril. The reason I conceive why this is the most certain cure, is, that the bladder being pierced on the lower side, the liquid continues to drip through the hole, as long as any remains, and even as fast as it gathers, so that the perforation does not get leave to grow up, or close again, until the animal is quite better; while, on the other hand, al-

though the water be ever so neatly extracted above by tapping, as soon as the sheep gets to its feet, no more of it can get out; so that the aperture made in the bag again closes, and the disease goes on. I have cured numbers both ways, and killed a part too; but those that I killed were generally with the wire; because, if the other fails of the desired effect, the wire is always applied to as a last resource; and many have I seen cured by it, which were, to all appearance, quite past redemption.

When I was a youth, I was engaged for many years in herding a large parcel of lambs, whose bleating brought the whole Sturdies of the neighbourhood to them, with which I was everlastingly plagued; but, as I was frequently weaving stockings, I fell upon the following plan: I catched every sturdied sheep that I could lay my hands on, and probed them up through the brain and nostrils with one of my wires, when I beheld with no small degree of pleasure, that, by this simple operation alone, I cured

many a sheep to different owners; all which projects I kept to myself, having no authority to try my skill on any of them; and it was several years before I failed in one instance.

The late Mr Laidlaw, of Willenslee, had a peculiar way of performing this operation; which, however plausible, was not very successful. He burnt a small hole in the soft part of the skull with a hot iron, and with a small hook took out the bladder of water entire; he then closed up the aperture again with a plaister of wax, tying it firm on. He cured only about every fifth sheep at an average, all the time I was acquainted with him.

If the Sturdy is not at all to be felt by pressing with the thumbs, it is either seated in the centre of the brain, or behind, and nothing can be done for them save with the wire.

I have always observed, that a sheep, on being wired, is sick, in proportion to the stiffness of the gristle below the brain. If

the wire is hard to go up, it is always very sick, but if it goes easily up, it puts it little off its ordinary. This I conceive to be occasioned by the wire taking a wrong vent, and perforating the most delicate and inflammable part of the brain. When one is wired, it is proper to take hold of it with both hands behind the ears, and shake its head loosely. This empties the bladder, and the water must find its way by the nose afterwards, for they will frequently grow quite better, though no water be seen to issue from the nostrils at that time: this makes them sicker for the present, but they are more apt to amend afterwards. If it were really necessary to extract the sac, or small bladder, which generally contains the water, the operation of trepanning would be, of all others, the most feasible; but if the water can be extracted, the sac is of little consequence, else so many could never be cured by wiring. However, though I have never witnessed the success of trepanning, I have been assured, that, when care-

fully and gently performed, and afterwards secured by wax-cloths, from suffering by the elements, a good many have been saved by it.

The best way is, to raise up, with a sharp knife, about the breadth of a sixpence, of the skin immediately over the part of the skull which is soft, then to raise about the half of that size of the soft skull, taking care not to separate them altogether, but let them keep hold of one side, folding, and keeping them back with the thumb, until the water is extracted; then fold them neatly down again, seal them, and cover all with a wax-cloth.

Others, again, make two cross incisions, each about an inch in length, then raising back the points of each angle, extract the fluid, and sometimes the bag which holds it. In both cases the utmost gentleness must be used, and care taken afterwards to make them close above from outward cold or wet. I do not greatly approve of this method, but some may, and experiments

are plausible. This disease is almost peculiar to sheep during the first year of their age, it being very rare that one older takes it, without having been formerly affected.

APPEARANCES ON DISSECTION.

On opening the head, a bladder is found, of most delicate texture, thin and transparent, and full of a clear fluid, like water, sometimes intermixed with a thin cruor. This bag is most commonly situated betwixt the brain and skull, and always increases in size as the disease advances; and the vacuum in the brain increases in proportion to the size of the bag.

The vacuum is sometimes of one shape and sometimes of another; and we might suppose, that, as the increase of the bladder

compressed the brain into smaller bounds, so the latter would become more firm; whereas the contrary is the case, for it becomes always more loose and watery; and some of those that die of it, without any thing having been done for them, have the brain almost consumed.

This gradual waste of the brain is as hard to account for, in a probable and natural way, as any thing relating to the distemper; for if, as some think, it is consumed by insects, whether is it they which cause the collection of fluids there, or the fluids which produce them? My brother William makes the following hypothetical observation: "Two or three recent observations induce me to believe, that the dissolution of the brain, &c. is occasioned by numbers of animalculæ, which I have observed swimming loosely in the liquor. They resemble ants eggs, both in shape and colour, but are somewhat shorter. But as all the animals, on which I made the observation, had been dead for sometime, so these puny in-

habitants of the brain were dead also: but if they had been living and organized insects, which I have no doubt they were, there would have been multitudes of so diminutive a size, as to be quite imperceptible to the naked eye: and I am fully convinced, that, if the disease were minutely observed, in all its stages, by microscopical observation, whatever its beginning was, its progress would be occasioned by the activity of these animalculæ, and by their increase both in numbers and size."

I said formerly, that it was sometimes situated in the middle of the brain:—when this is the case, the water is not contained in any particular bladder of its own, but enclosed in certain departments amongst the ventricles of the brain. The whole surface of the brain, next the skull, is then often quite unimpaired, though wasted almost to a shell by its internal consumption. In this case, the skull does not become soft in any part, and nothing can be done for them, save with the wire.

when no softness could
part of the head on dissec-
disease seated in the right
, a little above the line be-
and the ear; and though they
without horns, yet, owing to the
of flesh which there prevails, I
discovered it, else it might have
acted. A hole was wasted in the
about an inch in length, and half an
breadth. A considerable part of the
was dissolved to the left of the line,
which the wire must necessarily take from
the nostrils.

Such as die, in consequence of wiring, are in the greatest agonies, and often groan most piteously. On dissection, the brain appears inflamed, and the course of the wire is easily traced; it appears as if something as large as a common wheel spindle had passed through it. Yea, though the wire be made quite sharp, when the place is examined where it perforates the brain, the aperture made by it is so large as to admit

the top of a small finger. In a few instances, on being wired, I have seen them fall down like a creature felled, and expire in the space of two minutes.

Sometimes there are two or three different bags in the same skull, all unconnected with each other. I have seen one below each horn; in which case it may be felt in due time, on the upper side of each horn, where a small semicircle becomes soft. On reaching a certain degree of ripeness, the wire will sometimes cure these; but in almost every case, the trocar seems an excellent contrivance, and I hope, by and by, to be able, from experience, to publish its utility to my countrymen.

OF THE

PINING, OR DAISING.

THERE is another distemper, which is most severe upon young sheep, but it is confined mostly to some districts in the west of Scotland, where the land is very coarse. It is distinguished in different shires, by the three following names, *Pining*, *Daising*, and *Vinkish*. This distemper, though it somewhat resembles the rot, is the very reverse, and acts upon principles directly opposite: for as the rot is the consequence of too sudden a fall in condition on soft grassy grounds, this is occasioned by a too sudden rise in condition on coarse heathery soils.

In the rot, the blood grows too thin, and though the animal continues to feed most greedily, it pines daily away to a mere skeleton. In this the blood grows too thick; and though the sheep affected by it likewise continue to feed greedily, they continue as fast to pine away and decay. It fixes always on the best of the flock, but removing them to fine land, especially such as hath been recently limed, cures them immediately; and they never fail, in future, to become excellent sheep, and remarkably healthy. As I said this being commonly occasioned by a sudden advancement in condition on coarse, heathery, and mossy soils, (for the deer-hair and heather, when young, fatten sheep amazingly fast), so the finer breeds of sheep are not nearly so apt to take it as the black-faced Scottish breed. This has of late been sufficiently proved on some farms in Galloway, where this disease prevailed to such a degree in the Autumnal months, that, if the farmers had not been possessed of some finer and more dry pas-

tures, the Vinkish, as it is there called, would, in all probability, have exterminated the stock. But on the same farms having been taken by farmers from the east country, and stocked with the Cheviot breed, scarcely a single instance of it hath occurred. In that country, most farmers, who have extensive muirs, or mossy farms, think themselves obliged to have a low grassy farm, cost what it will; and without a prospect of this, they will not take a farm of the former description. They are commonly necessitated to change the pasture every week, in July, August, and September.

DIARRHŒA.

THIS is another ailment that fixes generally upon hoggs, or year-olds; and is commonly denominated the *Rush*. It is occasioned by a sudden flush of grass in April, or early in May, but is not attended with the least danger, unless they have been let very low of condition, so that their constitution cannot bear this sudden change; in which case it sometimes sickens, and cuts them off. If they weather out three days, and are in any condition of body, they mend faster than they which had nothing of it, the inwards being purified by it; and if they are seen to be in a weakly state, and are taken into

a house and fed with sweet milk, corn, and meal, for a week or two, it will save them. But the best way to prevent any bad effects resulting from it, is, to keep them as well up in condition as possible. It commonly ceases in June, and though stragglers of a flock will take it at any season, at no other season is it attended with danger, saving that of debilitating the animal somewhat. On sundry farms of the very best soils, there are many individuals of the flock subject to it all their lives, and never turn good sheep. Though this may, with propriety enough, be likewise called a dysentery, yet it must be considered as distinct from the Breakshuach, to which it hath no other resemblance, save that they are both attended with a purging. This is very different in its effects and continuance on different farms, and the sole cause of it may be considered as originating in a debilitated frame, and soft feeding afterwards.

APPEARANCES ON DISSECTION.

The skin is so thin, that the roots of the wool appear on the inside, and so tender, that it is almost impossible to take it off without tearing it. The flesh is white and lean, and the bowels of a pale gray colour, and so tender that they can scarcely bear touching. There is very little else in the stomach and intestines, save air. The internal coats are abraided from the intestines, and from the third and fourth apartments of the stomach. No fat is left on the bowels, nor indeed on any other part of the body; or such as is left, is converted into a tough pale substance, and has quite lost its quality.

How to distinguish this from Breakshuagh.

1. This chiefly attacks hoggs, and lean two-year-olds; the Breakshuach those that are older.

2. This occurs in the spring and ceases in June, when the other only commences.

3. In this the appetite is sharpened, in the other quite gone.

4. This is never fatal, unless the animal has been previously much debilitated; the other is generally so.

5. This is not contagious, the other is highly so.

6. In this the fæces are loose, but natural; in the other they are mixed with blood and slime, and extremely fetid.

7. This only puts a temporary stop to the animal's thriving, the other wastes it rapidly.

OF THE

THWARTER-ILL.

THIS is the next disease that falls to be mentioned, because it preys upon young and old, and middle aged. It is denominated the *Thorter*, or rather *Thwarter-ill*, the *Trembling*, and the *Leaping-ill*. By these three different appellations, shepherds mean to convey the idea of one and the same distemper, though there is every reason to suppose that they have originally been distinct names for three different diseases, which, having all some resemblance in their causes and effects, and attacking their flocks all about the same season of the year, they were often unable to distinguish which was

which, and by an easy transposition, converted them all into one. However this may have been, nothing is more certain, than that, under this triple name, are confounded all the diseases which, on a dry soil, proceed from a debilitated state of body and barren seasons. Under this triple name, I have seen them suffering by diseases which, at least, had much resemblance to the following:—Rheumatism, ague, palsy, and apoplexy; and even when an old sheep falls down, and dies of weakness and debility, the manner of their death differing somewhat from that of hoggs, it was frequently ascribed by shepherds to the Trembling, or Thwarter-ill.

It is needless to expatiate at great length on these ailments, they being happily, by the recent attention paid to sheep, nearly extirpated; but, no more than twenty years ago, their ravages continued to be so considerable, that farmers even then believed the disease, as they called them all, very infectious: and a stock that were infected

by it, to be fully as unsafe to buy as a rotten one. This bred the utmost confusion amongst our sales of sheep; and it became a maxim, that it was even very dangerous to stock a land that faced to the north from one fronting the south, and *per contra*.—They were also careful to buy none from a farm where it prevailed at the time; and the rot spreading far and wide, sheep were, before the close of the American war, almost gone to nothing.

But it is now perfectly evident, that, if sheep are kept in good condition, and gently used, these diseases, as well as several others, shall be known only by their names. It still exists on some straggling dry farms, where the ground is visibly overstocked, and there only on dry, frosty seasons, when the spring is hard and severe. On such places, if March and April are barren, no succulent food, nor almost even any green thing, is to be attained by the poor creatures for a long space of time. It is easy, then, to conceive the emaciated state into which

this must throw them; especially when many of them are either heavy with young, or giving suck. If at this time they happen to get an overstretch in running or leaping, or even a hasty start or crush in the fold; numbers fall a prey to this disorder, or rather to these various disorders. Some will fall down, and die in two or three minutes; others will lose power of one side, and lie sprawling until they die of hunger; others again will lie shivering, and very sick, at times, until death also comes to their relief; and some will go a long time quite lame, sometimes carrying one limb, and sometimes another, till they are likewise quite exhausted. In the first case, when they fall down, and threaten instantly to expire, which is certainly an apoplectic shock, I have seen bleeding, by cutting a piece from the tail, or opening a vein on the inside of the fore thigh, give immediate relief. In all the other cases, the best method is, to take them home, and feed them with strengthening food until their exhaust-

ed body gradually recover: if once, by this strong feeding, they are attacked by a temporary diarrhœa, they will recover very fast, and by degrees regain their pristine vigour.

I remember, when I was a boy, of serving with a shepherd named Ebenezar Stuart, whose wife cured every creature that was attacked by this disorder during the summer and autumn. She went into the meadows, and gathered an equal quantity of two herbs, which she called the dew-cup, and the merry-leaf, of which, though I do not know the botanical names, yet they are easily distinguished. The first grows upon bettle spots, is of a deep green, has many points, the middlemost of which is the longest, the rest growing gradually shorter, until they close on the opposite side; the dew, which does not wet it, stands in its bottom like a ball of chrystal. The other, called by some country people, the healing-leaf, grows on wet meadows; is long and slender, green on the upper side, and red on the back. Of these, she took a quantity pro-

portioned to the bulk and strength of the animal to which it was to be administered. I boiled them among butter milk, then strained them, and pouted the juice down the patients' throat; and, I never knew her medicine to fail in one instance of restoring them; but it was only one particular species of the distemper which raged thereabout; namely, that which had some resemblance to the rheumatisms, with aguish fits. She cured a bull, a colt, and many a sheep, to Mr Cunninghame of Hyndhope, and a stirk to Mr Scott of Gilmanscleuch, during the time that I was there.

I never had occasion to try the powers of this medicine, save once, upon a hogg or sheep, about eight months old, which dwindled on for several months, and at last recovered, and is alive at this day; but I believe dame Nature had as great a hand in it as my leaves.

This distemper is peculiar to dry soils, and prevails on dry barren springs, when the wind settles in the east. If the sheep

are in good condition, they are not nearly so apt to take it; but if they are either low of body, or the wind have a tendency to centre easterly, the greatest care must be taken to use the flocks gently; and it is highly commendable to decline udder-locking them altogether, as the fatigue which they thereby undergo, is often attended with the most fatal consequences. I saw an instance of this very lately, though the owners refused to admit of the usage they received at the udderlocking being the sole cause. There were no fewer than one-twentieth ewe of the whole large parcel died the succeeding week, and many of the others lambed dead lambs, at no small danger of their own lives.

Having mentioned this circumstance, I cannot help observing here, that I look upon this custom of udderlocking, so generally persevered in throughout Scotland, as an unnecessary, a painful, a dangerous, and a hurtful operation. As an instance of the truth of this assertion, I refer to every years experience and observation; for though the

ewes undergo it long before their time of lambing commences, they never fail then to begin lambing, though the lambs are not arrived at maturity. I cannot see what purpose it serves, but to hurt the ewes, and kill many of the lambs in their bellies. Nature has left a sufficient space bare to enable the young lamb to find the dug, and the uncovering of more, serves only to chill them in the most tender parts; for, though I have been engaged amongst them all my life, I never saw one lamb die for lack of its dam being udderlocked, nay, let her be as young or as rough as she will; nor did I ever meet with the man who could aver that he had seen any. Whether the Cheviot lambs are easier killed this way, or, if owing to the shape of their dams they are more exposed, I cannot tell, but far less hurt will make that breed lamb dead lambs, than the forest breed.

OF THE

BREAKSHUACH; OR CLING.

THIS terrible malady is occasioned solely by overheating sheep, and is the most infectious of all the disorders to which they are subjected; for, when once by misguidement it is introduced amongst a flock, it spreads like a pestilence, nor is one individual of them safe that but smells on the infected animal. Indeed, it is kindly ordered by the author of nature, that these poor creatures, as soon as they feel infected, immediately seclude themselves from all society with the rest of the flock, shunning them as carefully as they do the human

race, else its ravages might lay whole districts waste.

Besides that there is no disease so infectious as this, neither is there any other which wastes their body with such rapidity; for though the sheep be fat and strong, when infected, in two or three days it is reduced to a mere skeleton, it being almost unaccountable what becomes of its flesh in so short a time.

If they are overheated by running, or folding, or being pressed too closely in a fold on a warm day, at a season of the year when they are mending fast in condition, they are in the utmost danger of taking it; for a burning heat being raised in the blood and bowels, they are apt to drink greedily of cold water, while the pores of the body are all open, and the fat in a half melted state. This immediately brings on the disease; the animal is seized with a dysentery, or rather a bloody flux. The excrement becomes quite liquid, of a greenish colour, and at times mixed with blood, and emits a

strong fetid smell. This, as well as its languid appearance, will soon betray to the shepherd its unsound state; he will observe it wasting away like snow from the wall, with its head hanging down, and its sides fallen in, courting solitude with the greatest anxiety; searching after, and drinking water with avidity, while every draught serves only to encrease the malevolence of the distemper.

If the shepherd have no means of confining them from ranging at large on the hills, it is requisite that he take them home, and smear them with tar, to which he may add a little turpentine, which prevents the rest from being so readily affected by the smell. But, if possible, they should be taken and confined in a place where there is no water. If they reach the fourteenth, or even the tenth day, they will probably recover, though wasted to a mere vision, after which they seldom fail of turning excellent sheep. If they are taken early, a little of any thing that will physic them is beneficial, but if

the disease has reached a height, they are not able to bear it. The utmost care should be taken in the months of August and September that sheep are not over-heated, else it may not only raise the Breakshuach, as the immediate consequence, but sow the seeds of one more destructive and harder to be erased, as that will be hereafter shown.

There is no method of discovering the Breakshuach until once they become infected; then woe to the man amongst whose flocks it makes its appearance, especially if it be on a soft grassy farm. On a very firm walk, where the sheep are hardy, although bad treatment should bring it on a good many individuals, it is not nearly so infectious as amongst a flock that are fed with soft grass, and large bellied; among such it is epidemical in the highest degree. If it were not from this circumstance, it might be considered, in all other respects, as analogous to the dysentery in men, as it seems to arise from similar causes, is attended

with similar symptoms, and often yields to similar remedies.

Such as are infected are easily discerned, for they immediately seclude themselves from the rest of the flock; and, during the months of August and September, the shepherd ought to keep a sharp look-out for them, especially if there have been much handling or sorting amongst his hirsel; and if he see any lying or sauntering by themselves, he must inspect them narrowly. If they have the Breakshuach, they will have a sickly and a languishing look, the ears drooping, and the eyes heavy and red; the belly clung, and the wool closs and pale coloured. The infected animal neither eats nor chews the cud, but hath an unquenchable thirst. A frequent rumbling noise is heard in its bowels. Its excrement is thin, and either of a yellow or green colour, commonly mixed with blood, and of a slimy substance; as the disease advances, it voids it with increasing pain, and the smell of the whole body becomes fetid and nauseous.

There is another species of it, called the Dumb Breakshuach, in which they languish and pine in the same rapid manner, but it is only attended with a very small degree of flux, and is neither so fatal nor so epidemical as the other. Such as recover of either, generally lose their wool.

CURES.

The best method to cure the Breakshuach, if taken in time, is to administer physic until they purge freely, and I would recommend either rhuburb or glauber salts as the safest and easiest purgative. Bleeding, in an early stage of the distemper, is certainly beneficial; and if medical men could contrive any drugs that would induce perspiration, it could scarcely fail of some good effects. Men, the most knowing, are scared from trying the effects of medicine on their own species, for obvious and prudent reasons; but what an extensive field is open

for trying them upon the diseased of the flocks and herds? Perhaps simples might be discovered that would counteract the most virulent of the distempers and accidents to which they are liable. When the physic hath purged them, or when they are far advanced in the disease before they are brought home, aliment of an astringent quality only should be given to them. The most successful which I have seen used, is eggs and sweet milk, mixed with the bark of the alder-tree, ground to a powder.

MEANS OF PREVENTING IT.

These may be mentioned in a few words, it being perfectly well ascertained, that overheating the animals is the sole cause of it. Therefore the shepherd should take the utmost heed not to gather his ewes unnecessarily, or in any way to heat them in warm sultry weather.

There are, indeed, sundry sortings amongst

the sheep, that must be carried through at certain periods, be the weather as it will; but when these happen on warm weather, let a very few only be put into the fold at once, and used in the gentlest manner possible.

And here I must give my most ardent vote for the abolition of that greedy and most pernicious custom of milking the ewes, which is the ground-work of more evils to the poor creatures than any tongue can tell. Is it not enough that they have struggled with a debilitated frame and scanty meals, against all the cold showers and biting blasts of our mountains, to bring us up a stock of lambs, that they must be thus wasted perhaps to gratify a senseless female? In the first place, they are, early in summer, gathered and crowded into folds, that the males of their young may be gelded. A short time after that, they are gathered, folded, and plunged through and through a pool to wash their fleeces. As soon as they dry, they are gathered and folded again, that they

may be shorn; and, two or three times after that, they are used in the same manner, for the purpose of weaning the differing sets of lambs. And is not all this enough? that they must be wedged into a foul bught, evening and morning, and drained of their milk as long as the farmer's wife shall think fit. I am a sworn enemy to every practice which tends to waste the bodies of the sheep; and I would rather there were never another ounce of ewe-milk cheese nor butter in Britain, than that the poor animals should be so abused to procure it. Of all practices this is the most pernicious which prevails to the present day. It causes great numbers of them to turn blind; raiseth the foot-rot and leg-ill, and very frequently the fatal murrain of which we have been treating; and as it tends so much to debilitate the body, the rot, in some seasons, also ensues.

It is likewise exceedingly detrimental to the wool, making it much more thin, coarse,

and light; and I will venture to assert, tha when the farmer has paid the ewe-milke their wages, he loses as much in the artic of wool alone, as he gains by his cheese.

SCAB.

THIS is the only other disease that is in any degree infectious, and though only known by its name through a great part of Scotland, is, nevertheless, very troublesome amongst the fine-wooled flocks in low-lying grounds, if not timeously prevented by salving. It sometimes, likewise, finds its way into flocks of short sheep, either by infection, or making them lie too close together, during the night, in the warm summer months. And even in the most distant Highlands and Hebrides, it has of late years made considerable depredations; but as it is easily discovered, care must be taken to

check its progress at first outsetting, by salving or smearing, either those infected or the whole flock, which is the most sure way.

The infected sheep become restless, and manifest great impatience. Instead of feeding quietly, they tear off the wool with their teeth, and go in search of stones and banks, against which they may rub themselves. The skin, when narrowly inspected, has a red, fretted appearance, and emits a peculiar ichor, which hardens into a scurf. The wool becomes foul, and falls off prematurely. The animal ceases to grow, or loses flesh, and pines away; and if not cured by salving, invariably sinks under the continual irritation and poverty occasioned by it.

It is highly contagious; and when once introduced into a flock, lessens its value more than one half, by quickly infecting the whole. No man will buy of that stock for keeping, and the farmer would be found liable for damages, were he to sell any of

those infected for sound sheep: while the distemper very seldom takes them when in a proper condition for the knife.

It seems not to spread among the flock so much by direct contact, as by means of the rubbing places; for, in many instances, when the whole stock of a farm hath been dispersed and exterminated because of it, the stock which was afterwards laid upon the ground, became instantly affected; probably in consequence of infectious matter, or animalculæ, still having adhered to the stones and banks. The fine-wooled old rams are of all sheep most liable to it; and if the hoggs of the Cheviot, or Leicester breeds, are not carefully smeared in season, it is apt to break out amongst them. It is seldom ever generated among short sheep that have been smeared; but smearing does not prevent infection.

CURES.

A few sheep in any flock will, at times, appear having a hard scurf on their backs, occasioned by a heat, or some distemper; but this being neither dangerous nor infectious, it is sufficient to anoint it well with the common mixture of tar and butter.

But even the most virulent *scab* is not at all an incurable distemper; and there are sundry very common ointments which have been attended with good effects in removing it, when constantly and carefully applied; such are, tobacco juice, oil of turpentine, and a mixture of train oil and brimstone.

But the most effectual cure is that which can now be got in any apothecary's shop, known by the name of *sheep ointment*. It is a strong mercurial composition; and the most safe way is, for the apothecary to put it up in small balls, each of which he may deem sufficient, and safe to be rubbed up-

on a sheep at once; for as different hands may make it of different strength, the most experienced applier can hardly be a competent judge how much is sufficient for each animal without some such precaution. Let the shepherd, then, take one of these balls at a time, and mix it with three gills, or a mutchkin, of train oil, and if the animal be thoroughly infected, put the whole of this upon it, as close to the skin as possible; but if it is only scabbed, or itching on some parts of its body, perhaps each of these mixtures may serve two. If the infected parts are mostly on the back, or upper parts of its body, the shepherd must make a shed, or opening of the wool, exactly on the very ridge of the back, from the crown to the tail; let him shed it clean to the skin, and keep it open with both hands, while another pours in the ointment from a common tea-pot. He must not keep the wool too close down with his hands, else it will cause the ointment to drip upon it. In this case, a few sheds, or openings, will do;

[illegible] scabbed about the belly [illegible] must be shed very thick, and then [illegible] rubbed on the skin with the fingers, [illegible] it cannot then spread in the skin by [illegible]. Let it always be done on dry weather; and it is a safe and certain remedy, though perhaps the scab may again appear on the offspring of this flock.

VERMIN.

KED, OR SHEEP LOUSE.

This attacks sheep of all descriptions, but is always worst upon hoggs, and such as are unhealthy. It is of a flat make, brownish colour, and has three legs on each side of its head. When great numbers of them are upon one sheep, they cause them to itch, and pull the wool off with their teeth. Such prodigious numbers of them are sometimes upon an unthriving sheep, that shepherds have supposed them to be the cause of their leanness; but whether this is the case, or if the leanness produceth them, is hard to say: I rather suppose the latter to be the

truth, for the healthiest hoggs have always a share of them before being smeared. They breed mostly about the throat, or under part of the neck, where their eggs are often to be seen in great numbers; and great care should be taken to smear the hoggs particularly well about these places; for if any of them are left there, the animal is in great danger of being *bridled*. This is occasioned by the animal's bending its neck extremely to claw its throat with its teeth; on which occasions the teeth often fasten in the wool, so that it cannot disengage them, and it soon loses the power of its neck. I have known several die this way, and many more, who, if they had not been relieved, must necessarily have perished. Very few of them breed upon old sheep that are in good condition; and though most of the Highland farmers suffer their ewes and wedders to remain unsmeared, a very small proportion of them ever suffer so much from keds as to make them pull their wool. But a few unsmeared sheep, left among a flock

of smeared ones, seldom fail to suffer from them, for multitudes of the keds, which escape from the others, on the layers, fasten upon them.

They seldom or never prove fatal to the animal, or else the utmost neglect must attend it; for all the various salves, that are used for sheep, prove fatal to the keds; but if any white, or unsmeared spot, is carelessly left, they soon find it out, and nest upon it. It seems to have been for the destruction of this insect that smearing was first invented, which hath since been found to answer other good purposes.

TICK.

These, when full grown, are six times as large as the keds, but not so general over the country. This creature, before it is crammed with blood, is likewise of a flat form; of a brown, or livid colour, with some light speckles on its back. It has six

legs, and a flat proboscis, with three notches, like the teeth of a saw, on each side; with this it insinuates its head within the skin of the sheep, where it continues to suck blood, and swells for weeks, and often months, together. Indeed, when once it is fastened thus, it seems to be unable to extricate itself, as it never does come voluntarily off, until once its legs rot away within; yet, what is somewhat curious, it engenders its young while in this state. They may oft-times be seen fastened close by the wound, either on the sheep, or the shoulders of the dam. On first becoming discernible, they are as red as purple, which colour they gradually lose as they increase in bulk. They are very easily killed for the present; for tar or turpentine destroys them; and they only fasten upon such parts of the animal as have little or no wool upon them; but on grounds where they prevail, it is but a very short time until they gather again. —They are constant attendants upon the *Thwarter-ill;* wherever that disease prevails,

the Ticks prevail; and where there is nothing of the one, there are none of the other.

MAGGOTS.

These are the most fatal to the sheep of any vermin, for in warm weather they will destroy them in a few days, if not noticed and cleaned away. They commonly engender about the root of the tail; from whence they spread rapidly over the body, sometimes falling in towards the flanks, where they nestle below the skin, and often eat themselves into the entrails; and sometimes they spread up the two sides of the back bone, consuming skin, and fell, and all, as they proceed. It has been the opinion of many experienced shepherds, that they are generated from the seed, or excrement, of the large fly, commonly called the *flesh fly*. That this will not breed them, I dare not assert; it having been so long believed, and

...ages that are without
... truth; but that in many,
... I am perfectly cer-
... are bred without any inter-
... fly. I have seen thousands
... the skin of a dead sheep,
... impossible the fly could pene-
... when a carcase lies long without,
... weather not warm, they frequently
... betwixt the flesh and the bone.
... seen myriads of them formed of the
... of a sheep's mouth, in less than two
... after it was dead, when the weather
... very warm. I once saw mutton, fresh
and clean, covered in a pail, so that a midge
could not get at it, and having been forgot,
on examination it was found nearly convert-
ed into maggots: but, if they be at all the
progeny of the fly, sure nature never erred
so widely from her usual plan of making
children, at least of the same species with
their parents. The butterfly, indeed, genders
the caterpillar; but the caterpillar, after its
various changes, turns a butterfly; the com-
mon maggot, however, never turns a fly.

But perhaps the flies breed maggots, and the maggots flies; if so, they cannot be said to descend by ordinary generation. The sheep that are troubled with them, are easily discerned, though at a distance; they constantly hold down their heads, shake their tails, seem quite impatient, and often run with violence from one place to another; but, in the last stages, they grow quite callous and hopeless, and lie close clapped to the earth until they die. Many high-lying districts are not troubled with them; but wherever they are known to prevail, the flocks should be carefully looked through every day, when the weather is sultry or warm; for though on a change of weather, or a certain alteration in the constitution of the animal, they sometimes depart of themselves, yet the sheep are most apt to be destroyed by them in the most tormenting and loathsome manner.

That the sheep may be relieved, let the wool be shorn neatly off, all about the parts of the body that are infested; it must be

shorn off as far as the skin appears wet, for so far will the maggots spread, and no farther. The vermin must then be cleared away very gently, for fear of hurting the already ulcerated parts. If any lumps, like blisters, appear on the skin, they must be opened, as it is probable there are nests below them. The sore parts must then be bathed with soap and urine, and rubbed with the common mixture of tar and butter.

It has always appeared to me, that they were occasioned by a certain habit of body in the sheep, or from their feeding on some kinds of food, which gives the excrement, and perspiration, a rancid and putrid smell; for they have every one of them the same loathsome smell; and you can, when near them, distinguish those that will soon be infested from this circumstance. On very sultry weather, they will kill a sheep outright in a week; and, in three days, will sometime render them incurable. They do not always attack such as have a diarrhœa, or

rush. If the foulness about the tail be black, or dark green, they are in no more danger than others; but if it be light green, or of a yellow tint, they are almost sure to breed on such. I have likewise read, or heard of a maggot sometimes breeding below the horn, which caused the utmost giddiness in the animal; but, as no instance of it hath ever come under my observation, I can say nothing of it; but am of opinion, that a species of the sturdy has been mistaken for, and given rise to this theory. When the sturdy is seated below the horn, and suffered to proceed to the last stages, the skull, at the root of the horn, wastes away, and the disease comes in contact with the skin; in which case, the hair peels from the place, and maggots breed: and that this may have been mistaken for a peculiar distemper, is no improbable suggestion.

FLIES.

THESE have, of late years, been so exceedingly numerous in this country, that they have greatly harassed the flocks, and consequently the shepherds. They are certainly of many different kinds, and naturalists might distinguish by the various species to which each belonged; but as a great part of them appear to me to differ only in size, I can say nothing of them, save that which, in Scotland, is commonly denominated the *cleg*. This differs in shape, and nature, widely from the others; approaching, when full grown, to dimensions more like the wasp than common fly. These I suspect to be often the cause of all the evil wrought upon the sheep by the others, as none of them can penetrate the skin save the clegs; yet, though the wounds which they make be small, the flies do not fail to improve them, fastening around them in

knots, and causing them to corrupt and enlarge.

Some gentlemen, with whom I am acquainted in Nithsdale, were verily afraid of losing their stock of sheep by them, last year, 1806; and they certainly lost a part, and had the rest much injured. I chanced to pass through one of these flocks when they were near the worst, and was not a little surprised, as well as shocked, to see the condition they were in. Their heads were swollen, black, and seemed to be all over a scab, and the flies were settled on them like a black cloud. They are most troublesome and offensive on low-lying, and woody pastures; but when summers are warm, great care should be taken, when the sheep are shorn, to put a little tar upon every wound made by the scissars, be it ever so small; and to decline ear-marking them during the warm months, else they are in danger of being tormented and endangered by the flies.

CURES.

THE most of the cures which have been tried, have always been absorbents, to dry up and clean the ulcerated parts: such as lime, burnt alum, &c. The farmers in Roxburghshire and Northumberland derived much relief, of late years, by an application of what is there called the *sheep powder*; but unfortunately I do not know the ingredients of which it is composed. I can, however, recommend a cure from experience, which I hope the shepherd will find to be effective.

I happened, last summer, to be assisting at a sorting of a stock of sheep, of the Cheviot breed, where sundry of their heads were broken by the flies. The shepherds brought them out of the fold, with an intention of smearing the sore parts with tar. I advised them strongly to anoint them with *coarse whale oil*, such as they mix among the tar, having several times seen sores sof-

tened and healed by it. Some of it being near at hand, they were persuaded. The flies were at this time settled upon the fold, in such numbers, that when we went in amongst the sheep, we could with difficulty see each other; but when those anointed with the oil were turned in amongst the rest, to our utter astonishment, in less than a minute, not a fly was to be seen. I was likewise informed, that a few days afterward, the very same happened at the farm of Kinnelhead, before many witnesses. Those that were rubbed with the oil grew better instantly. Now, as wool that is anointed by this oil never loses its savour, till scoured, may it not be reasonably supposed, that if a flock of sheep, when in the fold, were sprinkled with whale oil, it would keep the flies from troubling them the rest of the summer?

HEAD-ILL.

This disease, radically considered, seems to be peculiar to some flocks only that feed on some of the highest mountains of Scotland. I have known many stragglers die with swelled heads, which, when opened, were all gorged with blood and stiff blue matter; but these appeared to have been venomed, or stung by adders, as the same infection, having the same appearance in every respect, sometimes takes place on other parts of the body that are bare of wool, such as the udder or fore-leg. On one farm of the March estate, there were sixteen ewes died all a few days after they were smeared, of, what the shepherds were

pleased to call, *the head-ill.* This was sundry years ago; and I saw some of them dissected, and am convinced it originated either in the animals being hurt, or from some venomous reptile, which had haunted the smearing-house; for they did not die all on one week, but every one of them at nearly an equal space of time from the time of their being smeared. The veins of the head were very turgid and bloody; but no inflammation, or red points, were discernible in the brain.

But, on some of the Kells-hills, in Galloway; on some of the most easterly of the Grampian Mountains; and in the forest of Skye,—such of the sheep as frequent the bare tops of the hills, are really subject to a disease of this kind, wherein the head swells and bursts. In Galloway they term it *the great head;* and the Gaelic name for it signifies the same thing. They will sometimes grow better, even although a good part of the scalp come off; but it most generally proves fatal. I was informed by William,

Hastings, an old shepherd who herded many years on *Cairnsmuir* of Carsfairn, the highest hill of all the south-west of Scotland, that they were obliged to keep them carefully from the top of that mountain, and to gather them as carefully from it every night; for if they got liberty to settle upon it three nights at one time, numbers of them would instantly appear affected with the *great head*. If they were suffered to remain where they were, they died in a short time; but if timeously removed they recovered. Though an intelligent man, it was his opinion, that the ground was too elevated for any animal to live upon it; the contrary of which can be well attested: nor did I ever hear of such a distemper attacking the sheep on Ben-Nevis, in Lochaber, which is the highest mountain in Britain, nor yet on Ben-Lawers, in Breadalbain, which, I suppose, is next to it in height.

But on the mountains around Cairn-Gorm and Lochavin, its attacks are so visible on those sheep that feed on the tops of the

hills, that the natives, in their usual superstitious way, ascribe it to a præternatural, and very singular cause. They say, that a most deformed little monster inhabits the very tops of these mountains, whom they call *Phaam*: that it is very seldom seen; but whenever it is seen, it is early on the morning, immediately after the break of day; that his head is larger than his whole body; that his intents are evil and dangerous; that he is no earthly creature; and if any living man, or animal, come near the place where he has been, before the sun shine upon it, the head of that man, or animal, will immediately swell, and bring on its death in great pain; and that his baneful influences are often very severely felt amongst their flocks.

The only probable way of accounting for this, is to suppose it occasioned by some poisonous herbage that grows on these heights; for surely no reptile can chuse them for their residence; and the most common herbs on such places, are, a thin, point-

ed grass, very sweet and nutritious; a well-known, hardy herb, that spread to the ground, in long tufted branch is called by the country people *the f* This, we suppose, they never eat, when very hungry.

BLINDNESS.

With this certain parcels of sheep are greatly harassed, but none die of it, saving such as are drowned, or break their necks, which frequently enough happens. It is occasioned by a continual fatigue for a length of time, which will bring it on at any season of the year. Thus sheep, that are long and hard driven to distant markets, or such as are daily dogged from one part of the ground to another; ewes that are wild, and roughly used by the women during the time they are milked, and hoggs which are fatigued by driving through snow to pro-

cure them subsistence, are all very subject to it. Their eyes at first become sore, and emit a sort of ropy humour, after which a white film settles over them; and, if they continue to be fatigued, it grows thicker, and the eye appears perfectly white; in which case, they are proportionally longer of mending. For this, some bleed them below the eyes, and let some of the blood run into each of them; but the enjoyment of ease will infallibly cure them in a space of time proportioned to the fatigue which they underwent before. Some shepherds ascribe it to the dust which arises from the heather-blooms; or the seeds of the mountain grasses being blown by the wind into their eyes; but I never saw, nor heard of it, prevailing among a flock that were lying at their ease. It is very wonderful, that though a number of individuals of a flock often go quite blind for months together, very few of them will stray from their own walk. Nay, unless when they lose themselves during the first three days, they are as sure to be found

at home as any of the parcel. Their necessity teaches them a wonderful sagacity, in following to the rest of the flock by the scent; and a friend generally attaches itself to the sufferer, waiting on it with the most tender assiduity, and by its bleating calls it back from danger, and from going astray. It is highly commendable to put them into some inclosure, to keep them from accidents; but the shepherd should never attempt to drive them, unless in company with others, else, if there be a precipice, lake, or danger nigh, they are almost sure to run headlong into it, and destroy themselves. Such as are seized with this natural blindness, that is, such whose eyes are not injured by crows, or other accidences, always grow better of themselves.

OUTWARD ACCIDENTS.

AWALDING.

Of these much might be written, as numbers of sheep are thereby lost; but I must be as short with such things as is consistent with perspicuity, having been obliged, by insisting on more material matters, to swell this essay to a size which I did not at first intend. This is the most common and dangerous of accidents, and is most apt to happen when it grows warm after a shower, any time from the beginning of May until the sheep are fleeced; the above raising an itching in their backs, they lie down, and turn

themselves over to claw themselves; and when it happens to be in a level, or in a hollow place, owing to the bulk of their fleeces, they cannot get up again, but soon swell and die if not noticed and lifted by the shepherd. The flesh of such as die thus, hath more resemblance to the braxy in taste, colour, and smell, than any other. Lambs that die of gelding are worse than either in these particulars.

SMOORING.

This is occasioned solely by the shepherd's not having his flocks gathered to proper shelter in rough and precarious weather. Old ewes, or wedders, are not so precarious as hoggs and year-olds; for though the temperature of the atmosphere hath no greater action upon the bodies of the former, yet they know better from experience what such impressions mean, and gather of themselves into the low grounds from the danger. Yet

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have; and, besides, the
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pherd may observe, that if the
blown sharply all day from any of
ewy points, there is no great danger
ne night ensuing; but if it be calm,
the hills involved in clouds of rime,
every long pile of bent augmented by
clinging hoar frost into the shape of a
azor, or candle, let him then be upon his
guard, and assemble his flocks into places
of safety. Where these places are, experience and observation only can teach him; but let him never leave them, where any ravine, gulf, or precipice, intervenes immediately betwixt them and the south.

The farmer must likewise be attentive on

his part, to provide artificial shelters on such parts of the ground as the sheep must often feed, and where natural ones are wanting; for I hold it an invariable rule, that the preservation and nourishment of the bodies of his animals must always be his first care, and other improvements will follow in course.

The best shelters that can be raised are clumps of Scottish firs, which, when grown up, keep the flocks safe and warm, though the tempest be ever so fierce; and if the shepherd have his hirsel assembled about one of these, he may sleep securely:

"The storm without may roar an' rustle,
He disna mind the storm a whistle."

It would greatly enhance, as well as beautify, most sheep farms, were proprietors careful to plant but one acre out of every thousand which they possess; the expences attending which are so trifling, compared with the advantages derived from them, that they are not worth mentioning: Indeed, since the introduction of the Cheviot breed becomes

every year more and more general, the necessity of plantings increase in proportion; as nothing is so convenient for the lambing season; and great have been the advantages derived by the Duke of Buccleuch's tenants from those which he planted on his estates.

But it being a considerable number of years before the sheep can, with safety to the trees, be turned within the plantings; and as they are no better to the tenant, during the first lease, than they would be without the trees, or not so good, so he is commonly more careful to stipulate for some fences raised of stone, which are likewise exceedingly useful. The best form in which he can make these, is that of a complete circle, or octagon, (the latter not being so apt to rush,) with a door in it, at which the sheep may go in and out. This door should always be made to face that place near by where there is good natural shelter, from that particular point to which the door looks, for there is no mountain pasture that is not sheltered from some airth, and this

will render the round, and its vicinity, secure from all quarters. There is no kind of *stell*, as they are called, so safe as this; sheep are never smoored in them, for the wind whirls the drift around them, and accumulates it in large pointed wreaths on the opposite side. If a judicious choice is made of the situation of such stells, they will be found of the utmost importance, for the sheep, if once acquainted with them, will come running to them in a cold night from every direction; and they are likewise very convenient for confining diseased sheep, or securing a parcel during the night at throng seasons.

Whole flocks are sometimes smoored by huge wreaths of snow shooting from the hills upon them, but the danger, in this case, is easily foreseen, and it is the utmost neglect to suffer them thus to be overwhelmed.

OF THE

ROT, OR POKE.

I SHALL now endeavour to describe that other mortal ravager, the Rot; whose person, appearances, haunts, and lineage, I shall so minutely scrutinize, that he shall, without fail, be apprehended and banished the country, or forced to fly into a voluntary exile. It is a curious circumstance, that, of all other diseases of sheep, the greatest variety of opinions prevail with respect to the real cause of this; and, amongst such a number, it may reasonably be suspected that it is very difficult to alight upon the right one; but I have stuck to a theory, laid

down by a few of the most sensible men on the Duke of Buccleuch's estates, who have had abundance of experience that way, and which seems to account at once for all the different opinions. Yea, I hope to make it appear, that all the various causes assigned for the Rot, only serve more fully to prove this the real and ultimate one. But, not to keep the reader in suspense, I hold it as an incontrovertible fact, that *a sudden fall in condition* is the sole cause of the rot.

Now, one tells me, that the rot is occasioned by the animal living on too soft and tothy food; such as grows in wells and awald lands, or such as are sandy, and have been fleeted with water. In one case, this may lead to the cause of it; for the flesh that the animal acquires by this soft feeding not being nearly so firm and permanent as that acquired by more astringent herbage, consequently such sheep as feed on the former, are much more easily subjected to a swift decay on the occurrence of any strait; and this likewise accounts for the circumstance

of the rot being most peculiar to soft and grassy soils. But the truth is, that such lands, instead of being farther the immediate cause of the rot, it is the disease which induces the sheep to settle upon these. "It is no wonder," says a correspondent of mine, "that many people apprehend such food to be instrumental in raising the rot; for no sooner is their constitution broke by it, than their palate becomes so vitiated, that they delight in nothing else than such garbage as grows about middens, kail-yard dikes, and water-fleeted meadows, and this long before their bad state of health is discernible by a great number of people."

Again, another tells me, that a course of changeable weather, from one extreme to another, raises the rot among sheep, and repeat the old proverb, "Many a frost, many a thow, soon makes many a rotten ewe." This is very true; for there is nothing in the world contributes more to waste sheep than a course of such weather; nor is there any thing more difficult to guard against.

Another tells me, that soft weather, and a late growth of grass in Autumn, occasions it. Now, as this is the most tender and soft of all grasses, the observation I made formerly is again applicable here, that the fat acquired by such feeding is easily exhausted: but this is not all; it is well known that a late growth of grass, occasioned by soft weather on the hinder part of the harvest, is ever succeeded by sharp and severe frosts, which wastes this newly acquired substance with such rapidity, as to gender the seeds of the distemper, so that my thesis still holds good. Others tell me, that there are two kinds of the rot; the black rot, and the hunger rot; the one occasioned by foul food, and the other by getting much too little food of any kind. But Mr Laidlaw of Cassock, Mr Borthwick of Sorbie, and Mr Grieve of Craik, all able and extensive farmers, firmly assert, and prove by many instances, that if you give sheep always plenty of food, and good shelter, they will never rot, or, at least, it never will

... which is so near being
... opinion, that it is in effect
... Some men, however, of
... scribed it to a cause so widely
... from all these, that I think it in-
... on me to lay their reasoning be-
... my countrymen in their own words;
... though I am perfectly convinced, that
... cause which I have here assigned is the
... one which brings on the rot among our Scottish mountains, yet other causes may induce the same disease in other countries of this realm, or a disease so similar, as to be mistaken *for* the same.

Mr Benjamin Price, a very sensible and judicious reasoner, after combating the theory, that *moisture is the occasion of it*, proceeds thus:—"The numerous inhabitants of the earth, and sea, and air, are strongly influenced by the seasons, and the state of the atmosphere; and the same causes, perhaps, that rapidly call myriads of one species into being, may frequently prove the destruction of another. Is it then improbable,

that some insect finds its food, and lays its eggs on the tender succulent grass, found on particular soils, which it most delights in? or, that this insect should, after a redundancy of moisture, by an instinctive impulse, quit its dank and dreary habitation, and its fecundity be greatly increased by such seasons, in conjunction with the prolific warmth of the sun? The eggs, deposited on the tender grass, are conveyed with the food into the stomach and intestines of the animals, whence they are received into the lacteal vessels, carried off in the chyle, and pass into the blood; nor do they meet with any obstruction, until they arrive at the capillary vessels of the liver. Here, as the blood filtrates through the extreme branches, answering to those of the vena porta in the human body, the secerning vessels are too minute to admit the impregnated ova, which adhere to the membrane, and produce those animalculæ that feed upon the liver, and destroy the sheep. They much resemble the flat fish called Plaice;

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Mr Benjamin the cud, it is scarcely
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, or fallow grounds, in
will rot in one day; and
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ir. Facts are stubborn proofs;
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But, in short, it appears to me, that
ever at first produces the *fluke worms*
the liver, these are the cause of this par-
ticular species of the disease; for, infesting
the liver in such numbers, the disease is
soon carried from thence to every part of
the body in the tainted blood. Now, as
salt, or sea-marsh, is well known to prevent,
and sometimes to cure the rot, this gentle-
man rationally concludes, that as salt is de-
structive to all insects, a solution of it given
to sheep, when first attacked by the disease,
for sometime, would cleanse their liver, and

are sometimes as la… …s he mentions some
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pipe which con… … flock of the rot, by gi-
to the heart. … … handful of salt for five or

That the … …ccessively. The hint was
livers of a… …en from the Spaniards, who
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w… …and worthy of a trial. But, to re-

… first symptoms of this malady among … flocks should be guarded against with … utmost care and perseverance, which … as follows:—When a severe storm of snow covers the ground, and locks up the herbage, so that they cannot attain nearly a sufficient quantity of food for some length of time; or when the weather is so boisterous that they cannot stir abroad to shift for food, or when they receive any bad usage; if, subsequent to any of these, or indeed on whatever occasion, a lethargy prevails among them; if they grow dull, and careless of feeding, the rot is certain to make

appearance by and by; if this lethargy general, the rot will be also general; if it prevails only with certain individuals, these are they which the rot will affect.

Therefore, as this is the only stage in which it can be checked, the utmost care should be taken, in the first place, not to let them suffer so as to bring on this listless inactivity, and to endeavour removing it on the very first appearance; which may be done by making them the proffer of food in which they delight, and also by a little gentle fatigue, that their appetite may be again excited. This languor is the very first symptom of it that can be seen, and it is always the consequence of having suffered much by hunger, fatigue, cold, or wet layers. My ingenious correspondent, above cited, who declines being mentioned, supposes, "that the fat within them then falls a consuming, from which the body receives a kind of false sustenance, that is the cause of the animal's torpidity. This continuing to increase, until the fat is drained of all its rich

quite cure t[illegible] the blood is by this instances, a[illegible] and not only robbed of who cured [illegible] but also of its viscuosity, vin[illegible] repelling the watery fluids; s[illegible] constitution, from the circumstances [illegible] of the body preying upon an- [illegible] receives a shock from which it never [illegible] recover." I must acknowledge, that this [illegible]vation of my correspondent's strikes me, [illegible] being most exactly natural and corresponding with truth; for if a sheep is discovered to be unsound, and killed, the remaining fat within them will not melt, even with the force of fire; and, though taken in the first stages of the disorder, the blood is always thin, and destitute of that dark colour common to the blood of a healthy sheep.

The next symptom that is discernible after this lethargy, is in the shape; the belly being shrunk, and clinged up for some time; they then fall to their meat with great voracity, and as long as their bellies continue light, they are not quite fallen a prey to

: for a bite of broom, heather,
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After this clungness, the belly
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rse symptom, as is natural to suppose,
the disease being then a stage farther advanced; they are then so far gone, that though they may live a long time, and, at some seasons, have a tolerable appearance, yet they never will be good sheep. If they are on a hard heathery soil, and are driven to this state by hunger or bad usage, they will recover and turn tolerable, though never good sheep; but if they are on a soft soil, and sheep of any condition, they are in a manner lost; for, what may seem strange, a very fat sheep is in the greatest danger of taking it, and irrecoverably lost if it does take it; and if there happens to be a very fat eild ewe left on a farm at Martinmas, that is invariably the first, or amongst the first, on whom the rot will fasten, on soft lands.

When a shepherd, or farmer, is endeavouring to discover such as are unsound in a fold, let him feel the heck, or small of the back; and if the ewe be firm there, and the skin refuse to slide on the flesh, it is a good sign, and, if she be not too old, is safe to keep. Leanness on the brisket, or ribs, is not so bad an omen of the rot; but a lean back is ever dangerous where the rot prevails, or is suspected. When he lays his hand first upon the sheep's back, or ribs, let him do it very softly, and press it still harder by degrees; and if he feel a slight crackling, as if there were small dry bladders betwixt the skin and flesh, that sheep will invariably turn out rotten, and is, indeed, so far gone, that she is past redemption to all intents and purposes.

Recourse must next be had to the eye, which is an invariable rule to judge of the state of the liver, and fountain of life. Let the corner of the eye, next to the nose, be turned out with the thumbs pressing gently upon each side, and if it is streaked with

beautiful red veins, branching to and fro, the sheep is safe and sound: the redder that the eye is the better; but as grass-fed sheep's eyes are never red, if they are free of a watery gilt, not too thick, and above all streaked with red veins, there is no fear: But, on the contrary, if the eye is yellowish, clear with water, and no red veins branching through it, the sheep is certainly unsound.

I was once conversing with Mr Adam Bryden on this subject, and, after having settled between us, that the eye was the best mark whereby to judge of a sheep when in hand, I asked him, how a man might best judge of them by looking at them in the fields, where no opportunity offered of examining the eyes? He answered, in his usual shrewd and comical style: "The late Advocate Mackintosh's method of discerning a good man, is the best in the world whereby to distinguish a sound sheep; his maxim was, 'I never like a man if I don't like his face,'—so say I of a sheep; for if once you take a narrow view of them, the

[illegible] is so visibly pourtrayed [illegible] that you can be at no loss [illegible] them. Their eyes are large [illegible] with a great *bladd* of white [illegible] star; the top of each *lug* des- [illegible] at least, a level with the root [illegible], and they have each such a grievous [illegible]tenance, that no living creature's can [illegible] it. In short, I cannot give you a bet- idea of it, than supposing a person who has been weeping for a long time, and is instantaneously roused into a rage."

As to the poke which they acquire below their chops, it is certainly a sign of the prevalence of watery fluids over the vitals at that present time; but it is not a certain sign that the animal is lost; for, on the contrary, a very lean rotten sheep is most apt to have the poke, and a very lean sheep is most apt to overcome the rot; and such sheep as, by mere oppression, are rotten on hard heathery lands, very generally have the poke; yet these will frequently, in a great measure, get the better of it: and all

ewes that are visibly affected by it, are better with lambs sucking on them than eild; for if they are eild, they are attacked by a lingering dysentery, which gradually brings them to their end.

The next thing whereby to judge is the mouth; for if the tongue be red and clean, it is a good sign: but the teeth must also be minutely judged; because, if they are kept an year or two over old, they are apt to decay before next year's draft-ewes go away. Now, the age of a sheep is very easily known by its teeth: for in its second year it hath two broad teeth in the middle; when in its third year, it hath four broad teeth; and, while rising its fourth year, it hath six broad teeth; next year its teeth are all cast, and, consequently, are all of those called broad teeth; and when it is five years old, and rising six, they grow as narrow at the top as at the root, while, as before, each tooth spread at the top. If the sheep is not a real good one, it should be put off this year, especially if on a soft ground, and of

the Cheviot breed; for such a large proportion of the profits of this breed arising from their wool, it is a great loss, as well as a risque, to keep them when old; for an old ewe's fleece is always quite light. An ewe on a hardy ground will hold a year longer than such; and the next year, when outgone six years, the teeth are grown narrower at the top than the root, and then they should be kept no longer; for, as they open at the top, the grass, on pulling, drags betwixt them, which incommodes them so much that they cannot thrive. When they grow old, too, their fore teeth appear each with a point below; the gums being fallen down from the middle of them, where there appears some yellow stuff resembling putty. All farmers must be attentive to these marks; for, at any rate, an old ewe is a risk, and no profit.

Since writing the above, I have received a letter from Mr Bryden of Aberlosk, one of the Duke of Buccleuch's tenants in Eskdale-muir, on the subject; which, though

carelessly wrote, as intended only to convey the ideas to me, and partly anticipated by the foregoing essay, yet, as I cannot convey his meaning better than in his own words, I shall here give a literal transcript of it, as far as it relates to the rot in sheep:

"Concerning the rot," says he, "of which you are so anxious to learn every particular, and why it is peculiar to our soft grassy lands, I have jumbled together the few suggestions which follow, for your consideration.

"It is a general observation, that wherever there is a rapid growth, the decay is proportionally so; and in all places where growth is slow, decay is slow also: and all vegetable productions, that have a slow, gradual growth, and permanent duration, are productive of similar effects on the animals that feed principally on them; while, on the contrary, such animals as feed on herbs, and grasses that have a rapid advance, and sudden decay, are so much influenced by it, that their bodies partake

much of the nature of their aliment. Of the truth of this observation, a survey of the various animals of our own country will fully convince you; and when you consider the following theory, this will account for the circumstance of the rot being peculiar to soft grassy lands, and also in part for the prevalence of that nervous disorder, called the trembling, or thwarter-ill, among sheep which feed on heath, broom, and other herbage of astringent qualities and permanent duration; and it is a fact, that changing of sheep from one of these walks to the other will prevent the diseases peculiar to each.

"For as for the rot, I maintain that it is always occasioned by a too quick transition from fatness to leanness; and though this discovery may be supposed new, it is, nevertheless, perfectly correct. There never were any sheep known to rot while they continued at good, equal maintenance, unless otherwise abused; and none ever will rot kept on pasture which does not feed

them very fat, nor allow them to fall away below a medium.

"Now, this disease can rather be prevented than cured; for this sudden transition towards decay, so completely disorders their whole frame, that to restore it is next to impossible. The substance of the body not having time to be carried off by perspiration, the blood mixes with water, which distils from the flesh, when the consumption commences. This water falls into the veins, and also into the stomach and bowels, and below the tongue. Thus the vitals of the animal are ruined before its body can pine to leanness in a gradual and natural way; while, if its food had been diminished by degrees, and its fat wasted gradually, it might have descended to perfect poverty without any symptoms of the rot being attached to it.

"It is also evident, that a lean sheep may be subjected to all the causes of the rot, and may also have some of its symptoms, and yet recover; because the substance of

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. . . copying them. He also applauds the
. . . of draining sheep pasture, as con-
. . . to the preservation of their health;
. . . both furnishes them with dry layers,
. . . preserves their food from being frozen
. . . in winter. He then concludes as fol-
. . . :

"It is my opinion, then, that this is the best method yet hit upon of accounting for the rot; and I think the best, and, indeed, the only means of preventing it, is to keep

times at a regular maintenance, give occasion nor opportunity [illegible] decay. If this could be effectuated though they could not be preserved [illegible] leanness, they might yet be kept from rotting. There is, indeed, another cause which I cannot help viewing as of the most baneful tendency towards raising it, and that is, warming sheep, especially when they are fat. To be then oppressed, or heated far above the natural heat, may not only make a pause in their advancement, but, by raising such a ferment in the blood, bring on that rapid decay so fatal; and I always think, that few are aware how prejudicial such treatment is to sheep; nor is there a more difficult thing attached to the shepherd's business, than to manage his flocks at all times without heating them. If these observations can be of any use to *you*, I shall gain *my* end, and you are welcome to make any thing of them that you please."

APPEARANCES ON DISSECTION,

WITH GENERAL OBSERVATIONS.

As I profess writing only from experience, and as all the sheep which have come under my observation have been affected in the same way to a very superior degree, though the animals were of different habits of body; I cannot give satisfactory intelligence how it may affect the sheep variously in various districts. From recent information, however, which I have gained from England, and some of the low-lying fat pastures of this country, I am induced to believe, that it must be of *two kinds*, of which the circumstance of their catching it so suddenly is a sufficient evidence. On some of these lands, as I have mentioned formerly, a whole flock will rot in consequence of feeding twenty minutes on a foul pasture. Now this must be accounted for in some

other way, than that which I have stated to be the main cause of producing it, among our half-fed sheep in Scotland. Yet is it not curious, that though seemingly brought on in a way so different, the appearances on dissection should be verily the same? I have never had the opportunity of dissecting one of these that took it so suddenly; but according to the accounts of those who have, they are exactly the same with those we view every year, and that take it in the usual lingering way; so that in describing the one I describe the other.

The only dissimilarity I have observed is, that such as had been reduced to their consumptive state by perfect hunger and cold, had not so extremely foul and ulcerated livers, as those that the disease had attacked while in higher condition; which is certainly the reason, why very lean rotten sheep only are those which ever get the better of it. In every one of them the liver seems to be the principal seat of the disease; but whether, from the vitiated state

of the stomach, the vital fluids carry infection to the liver, and cause its inflammation and consequent impurities; or, if the disease originates there, by reason of flukes breeding in its ducts, and is from thence conveyed to every part of the body in the blood, is too minute a cause for a shepherd finally to decide, though it is well worthy of investigation.

When a sheep is killed during the early stages of the disease, about the time when the flanks fall in, the fluke-worms are only to be found in the ducts of the liver, but often in great numbers. The liver itself is by this time swelled a full third larger than its natural size, and seems to have undergone a considerable inflammation; its coat is thick, and of an opaque colour, resembling a pale, clouded flint, or pebble. Nothing can be seen to ail the lungs. The tallow that covers the bowels and kidneys is loose and flabby; and looks as if part of it were melted, or its surface greased over with melted butter. One half, or at least one third of

this tallow will not melt by any force of fire, and such of it as is refined, and made into candles, wastes and runs excessively. A considerable, and sometimes a large quantity of water is found in the maw, which seems to be acquired by drinking; the inflamed and diseased state of the liver causing a continual thirst. I have seen ewes, on dry barren heather in spring, gather round pools, and drink greedily; and about ten or fifteen minutes afterwards, a poke would appear below sundry of their chops, although previously there was no such appearance. When flaying them, the fell is so loose upon the back, that it will not separate from the skin; on all other parts of the body, the skin comes easily off; appearing as having, in a great measure, been separated from it before. The skin is tenderer than that of a healthy sheep; and the wool, though not yet loose, comes more easily off. The fell about the short ribs, and flanks, which, in a healthy sheep, is a bright red, in them is pale, and bordered with a

tincture of yellow. Their mutton, when cold, does not grow stiff; and, when boiled, does not grow tender, but shrinks amazingly. Their blood is thin, frothy, and light coloured; and their heart, though perfectly sound, appears to be somewhat larger. As the disease advances, all the other symptoms continue to increase save this; for the heart is often larger in the first stages of the disease than in the last. A lean sheep will often pine long in it; but it cuts off one that is fat much sooner.

When they die of the rot, the skin and entrails are perfectly rotten, and the whole body of a dirty pale colour. The carcase has no peculiar smell; and although, when killed in the last stages of the disease, a large quantity of frothy blood frequently flows; yet when they die of the rot, very little blood is to be found in any part of them. When the poke below the jaws is opened, the skin is thick, and a congealed substance within it; and within that a quantity of clear water. The liver is the most

horrible mass of corruption and disease, that can be conceived. It is encreased to two or three times the size and weight of that in a sound sheep; all its ducts and vessels are crammed with flukes, and many overgrown ones often on its surface; it is half covered with hard, white lumps, of various sizes, which, when cut, have a grisly appearance; part of these are likewise mixed through all its interior, as are also long layers of sand, so that it is often hard to cut. The spaces, where none of these intervene, have quite lost their consistency, and are flaccid and gory. When it is boiled in water, it grows perfectly friable, and breaks in pieces of itself, while that of a healthy sheep grows firm and solid. There is generally little alteration discernible in the lungs; in some instances I have seen them somewhat wasted, and their laps thin, with some hard knots, or tubercules, here and there upon them; these were white in the middle, and a circle of faint red round

their bases; some watery globules are found both in the chest and belly.

In all of these symptoms do the English sheep partake, that are said to be infected with the rot so suddenly; the only difference that can yet be ascertained to exist, is in their manner of taking it; and I should like to be perfectly assured, that no mistakes have been conceived concerning it, and circulated from one to another; and that the whole has not been grounded upon this, that a concurrence of circumstances, such as heating, drinking water, and the like, has only made it visible upon the flock suddenly, and all at once, while the latent seeds of the distemper had been gaining ground in their vital parts for months before.

MEANS OF PREVENTING IT.

While treating of the cause of this disease, I have, of course, either directly, or

indirectly, hinted at the best means of preventing it already; for while I assert, that a too sudden fall in condition is the principal cause of that rot which hath been often so severely felt in Scotland, I am, at the same time, making it evident, that every method of preventing that quick decay, is the best means of preventing the disease: Of these I shall only recapitulate a few briefly.

The first, and one of the utmost consequence, is that of draining all the marsh and boggy land on the farm, except such of it as produces deer-hair and ling. If the land be a mixture of white-seeded bent, and prie, it is the better of being drained; for although the pasture is very little enriched for many years, yet it furnisheth the sheep with dry layers in the mean time; and when it becomes grassy, it is quite permanent; neither are the drains so apt to grow up on such a soil, but are likewise much more permanent than those in a bog or marsh. But where the ground is flow-

moss, and covered with ling and deer-hair, it should never be drained, let it be as wet as it will; for the wetter it is, the ling grows the better, springing up in bushes amongst it all the year round. This the sheep know well; and instead of cutting it with their teeth, as they do all other herbs, they pull it up by the roots, and no food in the world is so wholesome: neither will the deer-hair grow without a proportion of wet; and although only a temporary, it is a very wholesome and nutritive food; therefore, none of this kind of land should be drained, unless it be a shelter, or some convenient place for sheep to lie.

The best method of draining, is to make the drains as long and as straight as possible, with a descent of about one foot in twenty: for the longer they are, they gather the more water; and the more water that runs in them, they keep the better open, and do not grow up; and the straighter they are, the water, in time of floods, is less apt to run over; while, if the descent

be too quick, they do not dry the ground so well, and besides, if it is gravelly, they work deep pits and ravines in it. Again, the drain should always be made to run the same way with the water, or burn, on the banks of which it is cut; for, if it be carried the other way, it must necessarily fall sooner into the stream, and you have not the command of the descent, to guide it to the several springs in your way. A great deal might be said about the most proper system of draining pasture lands, but as I only wish to establish the belief of its utility, I shall not enter into it. That it has contributed greatly to the prevention of the rot, among the grassy districts in the south of Scotland, experience hath fully proved; where the average loss by it, of late years, hath not exceeded one for every ten that were cut off by it annually, some years in my remembrance; therefore, let no man say, that soft tathy grass is the cause of the rot, further, than that sheep, fed by it, are more easily wronged, and subject to a quicker

decay; for, of all mountain grasses, this that grows below the drains is the softest and richest.

As to the propriety of using them gently at all seasons, and providing them with sufficient shelter, though such could not have been more properly introduced than under this head, yet having had occasion to mention them already, I shall only observe farther, that the next great aim of the stock-farmer should be to keep them in good and regular maintenance, at all seasons; to lay no more stock upon his farm than it is capable of affording nourishment to at all times; and rather to err on the safe side, by keeping too few than too many. Indeed, sundry sheep-farmers have declared, in my hearing, that the fewer sheep they kept upon their farms, the more profits they made. Though this must be understood with some limitation, yet that the sheep must bear a proportion to the size of the farm, is not without foundation. An experienced wool-stapler will tell you precisely what farms are over-

stocked, from the lightness of the fleeces, and coarseness of the wool. Thus, if you lay sixty scores of sheep upon a thousand acres, and the next year stock it with only forty scores, the latter will produce you more wool, and of superior quality; while the annual loss, by various diseases, is likewise prevented. On all farms that are subject to lying storms of hard snow, the farmer should be careful to raise plenty of hay. There is no farm, on which, by irrigation, or composts, a quantity of hay cannot be raised, sufficient to meet any emergency. But, as it is not needed every year, it has been unaccountably neglected; though, in many of the inland districts of Scotland, they hold the health and lives of their sheep on very uncertain tenures, from this one circumstance; while a good stock of hay would, at all times, render any of them secure on that head. I have known, on such an occurrence, 50,000 sheep all driven from their respective homes, and crammed into the lower parts of Dumfries-shire at once;

where, though the farmer was obliged to comply with exorbitant demands, on the part of such as let the ground, his sheep were often much hampered. Now, it is plain, that this is a very disagreeable task, and attended with much difficulty and danger; but it is often the only alternative left to the farmer, beside that of losing his stock. In the first place, the sheep are much wasted, by being driven so far through hard snows; commonly much circumscribed in their wonted range and meals while there, and always much harassed on their way home, after the thaw, when every little rivulet is flooded and gorged with snow and ice; in addition to all this, it very frequently happens, that he drives them away thirty or forty miles uselessly, there being nothing more common than a thaw immediately preceding a great frost; and, when the frost is at a height, the farmer is most apt to flee with his flocks. The treatment they are obliged to undergo, during these jaunts, never fails to prey severely on their constitution. A

certain author remarks of the Scots, that they have every kind of sense, but common sense. Certainly the jest is very applicable to many of our Highland sheep-farmers, who are so careful to improve their breeds, and yet neglect this one thing needful, *to have always a stock of hay for the sheep;* and, if they do not need it, let it be given to the cattle, or horses, next year, and let the hay of that year's growth stand. This would always secure to the farmer the following advantages:—Possibly the ground might not remain locked up by the snow above a few days; in that case, it would preserve his sheep from a long and wasting jaunt. And even in the longest and most severe storms, there is always some meat to be had at home, which, with a foddering of hay evening and morning, and ease, keeps them commonly much better than those that are driven to the low countries. Besides, there is generally a recurrence of temperate and soft days, when the sheep can get their bellies full; and, when a thaw commences,

they have nothing more ado than rise from their layers and fall to their meat, while the others have many a weary mile to travel. I have only to add further, on this head, that no cattle nor horses be suffered to pasture at large on the sheep walks. If these short hints are attended to, they may help to diminish the rot, where it yet prevails; and where, by having recourse to these, it has been so happily eradicated, by adhering to the same measures, a recurrence of its baneful effects will be prevented.

LEG-ILL.

THIS being a term so much used by shepherds, it is proper to mention it, though impossible to give any particular definition of the disease; for the *Leg-ill* being an accommodating name, it is often blamed by shepherds for every sheep that is rendered lame, whether by accident or disease. It is frequently applied to distinguish a species of the thwarter-ill; that which resembles the rheumatisms, when the animal sometimes carries one limb, and sometimes another. When they pine long of this, the joints of the infected limb grow up and swell, and they continue to pine gradually away. I

mentioned formerly, that they were most subject to it, when, by nature, inclined to grow fast, and, for want of proper nourishment, stunted in that growth. They seldom die of this distemper; a change of weather and food sometimes dispels it; but some of them never mend, but continue to halt until they are killed, to clear the flock of those that are useless. When the infected joint is opened, a mass of stiff livid matter is found within, among the sinews, and all around the bone; and though the animal has been sufficiently blooded, a considerable quantity of dark-coloured blood is always found in some cavities close by the joint, which gushes out when cut.

On the very night after sheep are shorn, or very shortly after, they are likewise subject to a much more fatal and inflammatory distemper, commonly called the Leg-ill. This is occasioned wholly by sheep lying upon foul layers, while their skin is so bare, and many fresh wounds in it; and, on no ground are they so ready to catch it, as that

where sheep have lain much formerly; such as an inclosure that afforded them shelter in winter; but this being known, and guarded against, the disease is not very common. It most commonly affects the ham, or hinder thigh, which inflames exceedingly, and often carries them off in one day. The inflammation is communicated to the kidneys; but, as far as I can remember, not to the bowels. Copious bleeding is good for stopping its progress; but such as do mend of it are always very sick and distressed, and generally lose the power of using the infected limb for a long season. This last I believe to be that which is more properly denominated Leg-ill; but it is a convenient term, and applicable, on all occasions, where the legs of the sheep are concerned; even a shepherd, that hath an ill-bred dog, that bites the sheep until they halt, will often blame the leg-ill for it.

STAGGERS.

THIS is another term, like the foregoing, which is applied indiscriminately to so many different ailments, that it is impossible to say what is meant by it; for as the leg-ill is applicable to every distemper that attacks the limbs, so is this to all that attacks the head, save the sturdy, and sometimes to that too. There is likewise a certain distemper mentioned, under the head *Thwarter-ill*, which is by some shepherds denominated the *Staggers*. It is that resembling the apoplexy, wherein they fall instantly down, and tumble about, which is so apt to be brought

on by any sudden exertion, and for which instant bleeding is the best cure. There is another kind of distemper, which is commonly, and not improperly, called the staggers. It seems to be a paralytic affection. The animal attacked by it holds up its head in a fixed and convulsed position, and, when it endeavours to run forward, staggers to one side, or runs backward. I have seen sheep labouring under this distemper, but never had the opportunity of dissecting any of them. I suspect, however, that it proceeds from an inflammation in the spinal marrow; or, perhaps, it may be similar to the *locked-jaw*. It seldom occurs in Scotland. Such sheep as feed in woods are also subject to temporary fits of the staggers, appearing as if intoxicated; but they soon recover; yet, if they are affected this way, either a sudden exertion, or fulness of blood, endangers them much from a shock of the apoplexy. Nothing induces this temporary stupor more than a hearty feed of broom, on frosty weather, which so overpowers them, that they

will be sprawling for several hours, as if in their last throws. I knew a shepherd of Traquair, who, one day, coming to a number of his hirsel intoxicated this way, and thinking they were at the point of death, that their flesh might not be lost, cut the throats of four of them, cursing and crying all the while; and was proceeding in haste to dispatch more of them, if his master had not arrived and prevented him. The different passions, which then swayed each of them, were not a little amusing. His master asked him, in a rage, "How would you like, if people were always to cut your throat when you are drunk?"

FOOT-ROT.

THIS attacks only such sheep as feed on wet and soft lands, whose hoofs are so soft, that they can endure nothing; and on being folded, bughted, or housed, in a foul or gravelly place, such numbers of them often take it instantly, that shepherds have been led to believe it contagious. It is also at times occasioned by sheep feeding alternately in wet and dry ground, in warm weather; which at first causes a few small cracks, or nitches, to open about the roots of the hoofs, but by repeating the same cause, of wetting and drying them several times every day, these cracks enlarge and suppurate; a sharp fœtid humour exudes, which corrodes the flesh, and even the bone. When

suffered to proceed, in either case, (for both have the same appearance, and the same effects,) it degenerates into a foul and tedious ulcer, renders the sheep extremely lame, forces them often to walk, or rather creep, on their knees; the hoofs drop off, and, in some instances, I have seen the foot rot off altogether. When a sheep is first observed affected by it, let it be brought in, and the sore foot washed well with soap and urine; then well bathed with turpentine, and afterwards rubbed all over with tar, and bound up with flannel; and if it is then turned to a clean dry pasture, the cure is certain.

PELT-ROT.

This is by some supposed to be a disease, but it is merely an accident. When sheep are very lean, and exposed to a wet climate, or droppings of trees, the wool falls off them during the spring months. As soon as, by the breaking of the fleece, the skin becomes exposed to the cold winds and the rain alternately, a whitish crust gathers upon it, by some called the *Pelt-rot*, and is supposed by them to be the cause of the wool dropping off; whereas the loss of the wool is the cause of it, at least in all the cases which have come under my observation. It is rarely productive of any bad effects, if the

poor animal is not chilled to death; as the crust arises from the skin on the top of the new wool. The part of the skin that is hard should be well rubbed with tar mixed with oil or butter, and a piece of cloth sewed on the animal to keep it from the cold.

DROPSY.

In most of the counties of Britain this distemper is very rare amongst the woolly tribes; but in some of the islands and shores of Scotland, where the sheep feed much upon salt marsh, it is peculiarly destructive, and will probably prevail in other places of the same nature. It is curious, that a living author of much ingenuity (Mr Stevenson) has given it as his opinion, or rather asserted, that "sea-shores are found, by experience, to be useful in this distemper;" whereas it is the opinion of the natives, and seems to be incontrovertible, that these are the very causes which induce the distemper, for removing them to the land at a distance from

the shore prevents it; and if it were moisture that caused it, this could not be the case, for wherever the Highland hills are highest, there the rains are heaviest; and they are seldom highest upon the shores, where this distemper only prevails.

In some of the Orkney and Shetland islands, it destroys more than all other diseases; and on the shores of Sutherland and the Long-island, its depredations are considerably felt. I dissected a goat that died of it in the isle of Harris, and a sheep in the island of Skye: they were both very lean, and a large quantity of greenish coloured water within the rim of the belly; the maw of the goat was likewise full of water, and it was the opinion of the gentleman who accompanied me, that their constantly feeding upon salt marsh, and seaware, caused them to drink incessantly, which brought on the distemper; yet, though a native of that country, he could not say that he had observed this constant tendency of the diseased animals to drinking. Its

symptoms, as described to me, were, a dull heavy look, and a poke gathering below the jaws, like that in a rotten sheep; on turning out the eye, however, it is red. Mr Stevenson says also, that the legs swell at night for some time previous to the belly's becoming tense. Removing them to dry pasture, and back from the flat shores, is certainly the best means of preventing it.

HITHERTO I have written solely from experience and observation; having had no opportunity, and far less inclination, to consult any books on the subject, for fear I should have been drawn aside from the truth by false theories and subtle reasoning. I have now ventured to look at some of the few books which relate to this important subject, and find that, in some instances, their theories differ materially from mine; but what I have written, I have written. To experience only I appeal for my justifica-

tion. I find likewise, that there are sundry diseases incident to sheep, both in this and other countries, which have entirely escaped my observation; and as this book professes treating of the diseases of sheep, and as the farmer may apply to it for information on the subject, it is certainly requisite to give such hints as can be attained, relating to every *known* distemper to which this useful animal is subjected. Wherever they do prevail, they will be acceptable; and where they do not, it is uncertain how soon they may: people will scarcely repent of being provided for the worst. It is from this consideration, that I present the reader with the following cases and observations, which are all quoted, or translated, from scarce and valuable books, or manuscripts.

BLAST.

WILEY, WILTS, *May* 17. 1787.

"SIR,

"IN our country they breed many sheep, and manure the fallows with them. After having penned them all night, when they are driven into fresh grass, or young clover, they are frequently taken with what we call the *Blast;* that is, they over-gorge themselves, foam at the mouth, swell exceedingly, breathe very quick and short, then jump up and fall down dead immediately. This is so frequent a disorder, and so great a loss, that a neighbour of mine had seventeen died in one morning; indeed, within half an hour,

for they are often taken with it many at a time.

"We have no remedy ever known as yet, but driving them into a bare place, like a road, and keeping them in motion; but it is so sudden, there is not time for that in general. It is a disorder not unfrequent in cattle; and having a cow taken in this manner, I had heard, that by stabbing her in the maw I stood a chance of saving her life. I did this, the matter instantly flew out, gave immediate relief to the cow, she did well, and has had two calves since. I therefore resolved to try the same with my sheep, and have succeeded to my wish. The way I perform it is as follows:

"The sheep will swell considerably on the left side, or what you would call the nigh side of a horse, near the kidneys, behind the ribs, which is nigh the flank; the swelling is very protuberant, and there is mark enough, (about three inches,) where, if you dart your knife in, it must at this time

infallibly go into the maw. The matter immediately flies out, gives instant relief, and with only common applications of a horse-doctor's mixture of bees-wax, rosin, grease, &c. the sheep is sure to do well. All my neighbours were surprised at my success, as the thing was quite new to them, and all the shepherds round about.

"I am,

"Sir,

"Your humble servant,

"WM. POTTICARY."

WIND.

"I HAVE seen several sheep, immediately after being shorn, appear to be in violent pain; their sides are somewhat extended, and their breathing very short; the head is hung drooping, and they have a great aversion to moving or walking. These symptoms continue to increase, until the sheep dies in a very few hours, unless a violent purging comes on, which generally gives immediate relief. On enquiring for the name given to this complaint, I found it was called the *Wind*, but where the seat of it lay, few could tell me; some thought it was in the head, others in the lungs, and the remedies they applied were as various as their opinions of the disease.

"Not satisfied with these accounts, I endeavoured, by inspecting the carcases of sheep that died of the disease, to discover the cause and seat of the complaint. On opening four sheep that died of the disease, I found all the intestines rather distended with flatus, but not in any great degree. Their blood vessels were very turgid, and of a deep red, particularly those of the large intestines, excepting the rectum, or what is commonly called the bum-gut, which had a healthy appearance, as likewise had the stomach, milt, caul, liver, heart, lungs, and, in short, all the viscera contained in the cavity of the trunk. From these appearances I will venture to say, that the disease in question is a violent inflammation of the intestines, perhaps in some measure arising from bruises in sheering, but more so from losing a warm clothing, and being suddenly exposed to cold air and cold feeding.

"I beg leave, therefore, to recommend to farmers, that, on the first appearances of the complaint, they put the sheep into a stable

or other warm place, and immediately bleed it freely. Bruise a quarter of an ounce of some carminative seed, such as carraway, anise, cummin, or fennel, and mix these with two ounces of Glauber's purging salts in a pint of water. Place it on a fire, and make it boil for a few minutes; then strain it off. Then add a quarter of an ounce of powdered jalap, and while lukewarm, give the sheep a quarter of a pint of this liquor well shaken together every half hour till it dungs. It should have no food or cold water till recovered, but a little warm water might be of service. (Signed)

"J. WEBB."

CHILL.

"If a sheep is thin of wool on the back, mark it for sale or fatting, whatever other good qualities it may have; because when it rains long or hard, the water penetrates easily to the skin on the back, washes out the yoke, and chills the spinal marrow; the sheep's back in that case is raised into a curve, more or less as the *chill* is greater or less; and, if I may be allowed a conjecture from analogy among the human race, the animal catches cold, a cough ensues, a consumption that is visible from the leanness or weakness of the animal, and if it be not stopped, or cured, the sheep dies rotten. * * * * *

"It slipt my memory, in my last, to mention a very common disorder ewes are liable to after yeaning, *a stoppage in the lacteal ducts of the udder*, sometimes in that leading to one of the nipples, sometimes to both; the udder swells universally with partial knobs, which sometimes bring on an inflammation, and if not stopped, perhaps in the course of twenty-four hours, part, if not the whole, of the udder mortifies, and as the mortification proceeds rapidly, the sheep dies. The process of cure is, to clip off the wool as close as possible; to open, with a razor or other very sharp instrument, the principal lacteal duct or ducts; to squeeze out the morbid matter, and put in a little fresh butter; and to keep the sheep separate from the flock. The ewe frequently loses the use of one teat, and sometimes of both; if but one, she will maintain the lamb; if both, the lamb to be taken from her, and the ewe to be fatted.

"On the subject of the disorders of sheep, consult the shepherds rather than the farmers,

as they are constantly with the flock; and though many of them are very ignorant persons, nevertheless consult even these, as they may know, from tradition, some things extremely valuable. Note down what they say, as particularly as you can, under its proper head. Many things worth knowing may be thus collected together from facts and experiments. Thus the signs, the symptoms, the effects of the disorders,—the medicines, the quantity, quality, time, manner of application, and season of the year; with the effects of each, whether cure or death, may certainly be best learned from them.

(Signed)

"J. COLLINS."

Bath Papers.

RED-WATER.

"THIS disease commonly makes its appearance about the beginning or end of winter, and first affects about the breast and belly, although at times it spreads itself over other parts of the body. It consists in an inflammation of the skin, that raises it into blisters, which contain a thin, reddish, and watery fluid. These continue for a short time, break, and discharge their matter, and are followed by a blackish scab.

"When the sheep are exposed to cold or wetness, the skin being fretted, makes the blisters rise; or they often arise from cold affecting the animal internally; thus producing a slight fever, which throws out these vesicles on the body, similar to the scabby eruptions which appear about the face, and more particularly about the mouth, of

persons affected with cold. The blood in this disease is but little affected, although a little of it oozes into the vesicles on the skin, and communicates to them that reddish tinge, which gives origin to the name.

Red-water is a disease that but seldom appears in this country, and is almost never fatal. In cases where the disease is violent, a little blood should be taken in the manner described. The sheep should be placed in a fold by itself, the blisters slit up, and a little infusion of tobacco put into them, and the following medicine may be given for three or four mornings successively:—Take of sulphur two ounces, honey, treacle, or syrup, three ounces; mix them, and divide them into six doses, of which one may be given every morning in half-a-mutchkin of warm water. If this is found unsuccessful, half an ounce of nitre, mixed with the foregoing receipt, will be attended with good effects; after which a dose of salts may be given, and the body washed with lime-water upon the parts affected."

ERYSIPELAS, OR WILD-FIRE.

"THIS, like the last mentioned disease, also affects the skin, and is apt, if not attended to, to spread very quickly among the flock. It is attended with more inflammation than the last, and but seldom with blisters over the body. It commonly appears in August and September, and does not continue above eight days at a time, although those sheep once affected with it are liable to a relapse. In former times, it was a practice with shepherds to bury the sheep affected with this disease at the door of the fold, which they believed acted as a charm to drive it from the flock. This, however, is now disused.

"It is necessary for the cure of this distemper, to follow the same method recom-

mended in the *Red-water*. An ounce of salts may be given every morning for three or four days, which serves very well to begin the cure, when the last mentioned receipt, with the addition of the nitre, may be continued till the disease disappears."

THESE two cases are copied from Mr Stevenson's communications to the Highland Society. It is the first time ever I heard of such diseases; and it is not improbable that they are imaginary, or drawn from some similar disease in the human frame, as the whole of the symptoms, and process of cure, would seem to intimate. There is indeed a distemper called the *Red-water*, which is very destructive among the young cattle in some parts of Scotland, but it is so totally different from this described by Mr Stevenson, as to be recognizable only by the name.

MEMOIR

Of the suitable Remedies for the most prevalent Diseases of Sheep. Read at the Meeting of the Royal Medical Society at Paris on the 27th of January, 1778. *By* M. DAUBENTON. *Never before Published in the English Language.*

FOR the translation of this and the following Memoir, I am indebted to my friend Mr James Amos of London, now studying at the university of Edinburgh, who translated them solely for this work. It is entirely a practical essay. M. Daubenton, besides being a celebrated naturalist, spent twelve or fourteen years in a sheep country in France, for the purpose of studying more minutely every thing relating to their frame, nature, and propensities. And therefore the

essay certainly highly deserves a place here; for on a perusal it will be found, that sundry of the diseases here treated are analogous to those in our own country, consequently the cures he mentions must also be of use here; and though others of them have not yet appeared in Britain, the introduction of foreign breeds may introduce foreign diseases. This we can neither guard too well against, nor be too well prepared for when it happens.

"In our climate sheep are not affected by any intemperature of the air, except the violent heat of the sun; their wool defends them from the most intense cold. For ten years past, in the northern extremity of Burgundy, I have had flocks exposed to the open air night and day throughout the year. The severe frosts of 1768 and of 1776 had no effect upon them, although the fluid of Rheaumur's thermometer descended to 14 degrees and a half, and to 18 degrees below

Zero. The heaviest and most long continued rains, the snow with which they were covered, and which served them for their only drink, the icicles formed upon their wool, and which remained suspended from it, caused no disease whatever; but the heat of the sun has been productive of many deaths in the fields, and many more would have fallen victims to it had not proper precaution been speedily observed.

"The disease in sheep caused by excessive heat has been denoted by an analogous name, viz. the *Heat*. Those most free in blood, best fed, and most robust, are more frequently subject to this disease of heat. Those attacked by it gasp for breath, foam at the mouth, and bleed at the nose; the eye-ball becomes red, the animal droops his head, staggers, and soon falls dead. After death, the eyes, the lower part of the cheeks, the nether jaw, the gorge, the neck, the inside of the gullet and of the nose, are of a mixed colour of red and somewhat blackish. On opening the animal, we find the

blood vessels swelled in all those parts just mentioned, and in the head. All these symptoms naturally lead us to have recourse to blood-letting, which speedily effects a cure, if administered in time. This remedy, then, is one most necessary for sheep in warm climates, in temperate climates like our own, and also in cold ones, where the sun is powerful in summer.

"There is another remedy absolutely necessary to sheep in every country, and in every season; it is a remedy for the *Itch*, to which they are more subject than to any other disease. Flocks grazing in pastures most suited to their species, and even to their kind, are not exempt from it. Sheep that are best tendered, best fed, and most vigorous, are liable to it. When the fat humour of the grease grows rancid, it affects the skin, and gives it a disposition to itch. If this disease is not stopt on its first appearance, it spoils the wool, and causes it to drop off. If the progress of the distemper be not arrested, the flesh becomes ulce-

rated, the bones rot, and the death of the animal ensues. A remedy for a disease so frequent and so dangerous is still more urgently necessary for sheep than bleeding, because they are oftener afflicted with the itch than with the disease of heat. To record the observations I have made on these two remedies, is the object of the present memoir.

" Sheep are bled in different parts of the body, in the forehead, above and below the eyes, in the ear, in the jugular vein, the shoulder, the tail, below the ham, and in the foot.

" Before treating of the different kinds of blood-letting, our subject leads us to make some reflections on the treatment of the diseases of sheep. The manner of treatment should be adapted to the proportion of strength in the animal, and to the knowledge possessed by the shepherd in reference to medicine and surgery. A sheep attacked with a tedious disease has little strength ; in this case the remedies administered must be rather nourishing than exhausting. In accidental diseases, which are

speedily cured, the sheep loses nothing of its strength, if the remedy be an easy one, and spoils not the wool.

" The bleeding of the sheep, then, must be performed quickly, and by a single man. The vessel opened by the operation, must be so large as to give a sufficient quantity of blood, and situated in a part of the body where there is no wool.

" I think, that in most of the diseases of sheep, it is unnecessary to select that part of the body, where the bleeding may appear to be most favourable. The most skilful of the medical profession are not agreed as to the different effects of bleeding in different parts of the human body, although they have much experience upon the subject. And what would shepherds do, with the feeble light afforded them, upon a subject far from being elucidated by reference to animals ? It is better to divest them of a practice, in which they might commit gross mistakes, and which most frequently appears of no utility whatever to the sheep.

" But when a disease attacks many flocks, spreads from one district to another, and pervades contagiously many provinces, it is an object of prime importance, and becomes a national affair. In such unfortunate case, all the resources of medicine are to be employed; and, amongst others, those of the different bleedings. The ablest medical men should endeavour to discover the cause and remedy of a disorder, menacing the destruction of animals useful to every nation, to those especially who employ wool in the finest manufactures.

" Keeping this in view, the Royal Medical Society has established a correspondence constantly subsisting between it and the shepherd, for the purpose of instruction. Members of the Society are ready in urgent cases, to direct the shepherd in the management of his flocks. My observations on the bleeding of sheep do not extend to rare and complicated circumstances. I think, that, in ordinary cases, it is sufficient that the shepherd know how to

bleed on one particular part of the body of the sheep, suitable at once as to the size of the vein, the facility of operation, and the preservation of the wool. Having thus premised, I proceed to treat of the different bleedings made in various parts of the body of the sheep.

"The veins of the forehead are small; they consequently give but little blood, and are not sensible to the finger.

"Above and below the eye, or between the two eyes, bleeding is performed only upon the portion of the angular vein, which extends from the cavity of the eye-brow to the upper part of the cheek. Thus, although these three bleedings have three designations, they may be reduced to one alone, which is made in different parts of one portion of the angular vein, about an inch and a half in length. This bleeding gives sufficient blood, because the vein is large; but it is difficult to feel it with the finger, although swelled, consequently the risk is frequently run of missing the vein.

" The veins of the temples being too small, cannot be made to swell by pressing. In most kinds of sheep, the temple is covered with wool; it is difficult to bleed in that part those which have horns. However, I have bled several in that way, though the blood oozed slowly, without freely flowing.

" When blood is taken from the ears, it is by a wound, because the veins are so small, that many must be opened at once. An incision is made in the ear, and a blow under it is given, to cause the blood to flow. This is a bad plan; it should only be adopted in the most urgent cases, where it is impossible to act better.

" Bleeding in the jugular vein, in the shoulder, or below the ham, is too difficult for most shepherds; and here one man alone cannot easily operate; besides, that in the neck and the shoulder would spoil the wool.

" On the tail of the sheep two sorts of bleedings are made; one on the part de-

void of wool, the other at the extremity; the former gives but little blood.

"To draw blood from the end of the tail, the last false vertebra, at least, must be cut off; this cannot be done with a lancet. The extremity of the tail is cut off; by this means, the veins, and the arteries, with the bone, are sliced off; the flesh is stripped up, and leaves the naked bone; a wound remains.

"Sheep are bled in different parts of the feet; but here only small veins are to be found. Besides, apprehensions may reasonably be entertained, that dirt may frequently intrude into the openings made by these bleedings, and thus cause inflammation, and collection of humours, which not only bring on lameness in the animal, but may extend into the hoofs. Bleeding in this part is also attended with this inconvenience, that it cannot easily be performed by one person.

"I have discovered another method of bleeding sheep, which appears to me pre-

ferable to all those at present in use; because it is not subject to any of the inconveniences above mentioned, and is more easily executed. This is done at the lower part of the cheek of the sheep, at the spot where the root of the fourth tooth of the cheek-teeth is placed, which is the thickest of all; its root is also the thickest. The space which it occupies, is marked on the external surface of the bone of the upper jaw, by a tubercule sufficiently prominent to be very sensible to the finger when the skin of the cheek is touched. This tubercule is a very certain index to the discovery of the angular vein which passes below. This vein extends from the under border of the jaw beneath, near its angle, to below the tubercule, which is situated at the root of the fourth cheek-tooth; farther on, the vein bends and extends to the cavity of the eye-brow.

"To let blood in the cheek, the shepherd begins, by placing an open lancet between his teeth; he then puts the sheep between

his legs, and squeezes it so as to hold it fast; his left knee is rather more advanced than the right; he places his left hand under the head of the animal, and grasps the under-jaw, so that his fingers are under the right side of that jaw, near its hinder extremity, in order to press the angular vein, which passes in that place, and to make it swell; the shepherd touches, with the other hand, the right cheek of the sheep, at the spot nearly equi-distant from the eye and the mouth; he there finds the tubercule, which is to guide him; he can also feel the angular vein swelled below this tubercule; he then takes in his right hand the lancet which he holds in his mouth, and makes the incision from below upwards, half an inch in length below the middle of the projection, which serves to guide him.

"I do not exagerate when I say, that by this method a blind person might bleed a sheep; because, with one of his fingers, he feels the tubercule, which directs him whilst making the incision.

" Bleeding in the cheek, then, is a method equally sure and simple, since the situation of the vessel cannot be mistaken, whilst it is sufficiently large to furnish a proper quantity of blood; for it receives that of the veins of the forehead, of the eyes, the nose, the upper lip, &c. The blood is there retained by the hand of the shepherd, which serves as a ligature at the angle of the jaw. No risk is run of opening the artery; for I have always found some distance between it and the vein at the place of bleeding. One man is sufficient for the performance of this operation.

" All these advantages have determined me to give the preference to this method of bleeding in the cheek above all others, having made the proper comparisons in practice.

" I have now recommended a method of bleeding sheep, more certain, and more easy, than those in present use: it remains for me to point out a remedy for the itch, prefera-

ble to those usually employed in this disease.

"The itch in sheep makes continual progress; the longer it lasts, the more difficult it is to cure. The shepherd, then, should be extremely attentive to discover its earliest symptoms. He must keep a careful eye over his flocks, and observe if any sheep scratches himself with his feet or his teeth, or if he rubs himself against the rack, against trees, or walls, &c. If the wool is spotted with dirt on those parts of the body which the animal can reach with its feet, if there are tufts of wool pulled out of order, which the sheep has torn with his teeth, or scratched with his foot, these signs indicate itchings caused by lice, by the itch, or some other distemper. The shepherd must carefully examine his sheep, by separating the wool in the parts affected, to see if there exist real symptoms of itch.

"These consist in that the skin is harder in the scabby parts than in the other parts of the body; grains are felt which resist the

finger, it is covered with white scales, with crust, or small pimples, which are at first red and inflamed, and afterwards assume a white or green colour. All these symptoms are followed by an itching; but there is another sort of scab which does not create itching; this quickly spreads under the wool, and, instead of causing it to drop off, makes it turn red, and become stuffed with felt, as if it had been trampled upon.

"When some of these symptoms have been observed, the remedy for this disease must be applied without delay. At the same time, if it is judged that it was caused by fatigue, or a state of tenderness; if it has arisen from bad air, or the heat of the house; from want of proper nourishment, or from the naturally bad constitution of the sheep, the original cause of the evil must be removed, because it would stand in the way of the success of the remedy. If the itch proceed from some other disease, regard must be had to both at the same time.

"When the disease is not inveterate, or

ulcerated, it may be cured by topical, without internal remedies. In this disorder, many topical remedies have been employed; it would be tedious and useless to recount all in this memoir: I shall only here mention the principal.

"The most customary are, the infusion of tobacco, oil of juniper, solution of green vitriol, of alum, or of common salt, the flowers of sulphur, grey ointment, &c.: all these remedies may cure the itch, but each is attended with great inconvenience. The infusion of tobacco, the oil of juniper, and the solution of salts, do not agree with the state of the scabby skin; they cause its thickness, its dryness, and hardness, to increase and continue; it is thus hurtful to the growth and good qualities of the wool; besides, the tobacco, and particularly the oil of juniper, give to the wool red and blackish tints, which spoil it; sulphur gives it a bad smell, which remains in the fleece after shearing; the mercury in the grey ointment may give to the shepherd, and the sheep affected, a

salivation, to remove which, the application of internal remedies may be requisite; besides, to animals destined to be our food, no remedies should be administered which are at all likely to produce any bad effect.

"After having tried upon my sheep all these remedies, and many more, I found it necessary to discover a better, which should be less expensive, and more easy in the application, communicating no bad quality either to the wool, or to the flesh of the animal. A mixture of fat, or suet, with essential oil of turpentine, answered all these conditions. Fat is preferable to suet in winter, because it is more easily spread over the skin of the sheep; but the suet is better in summer, because it is not so soon melted by heat as the fat. The composition of this remedy is extremely easy.

"Melt a pound of suet, or of fat; take it off the fire, and mix into the suet, or fat, a fourth of oil of turpentine.

"This ointment costs but little; it has no bad effect upon the wool, it softens the

skin of the sheep, hardened by the itch, and cures the disease. It may be rendered more active by increasing the dose of oil of turpentine.

" It is easy to use it without cutting the wool where the itch is; since it is sufficient to separate the tufts a little, in order to lay open the part affected; then the shepherd scratches the skin with the scratching knife, merely so as to raise the crust, and he applies the ointment, by spreading it over with his finger.

" Some adhere to the bad custom of scratching the skin of the diseased sheep with a bit of brick, till it is on the point of bleeding; a small wound is thus made, which is an additional evil. I have provided my shepherds with a single instrument, which is sufficient for all the operations they have to perform on sheep; it is a sort of incision knife, whose point has two edges, and serves as a lancet; the handle terminates in a blade of bone, or of ivory, which is a scratching knife.

" Ellis, one of the best English authors who have written on the treatment of sheep, has given different recipes for the itch, wherein oil of turpentine is mixed with beer, or with a decoction of tobacco, soap, urine, brine, &c.; but I do not think that the oil of turpentine has ever yet been employed in the manner in which it is in the ointment I propose, and so as to be suitable to every circumstance. The efficacy of this ointment is proved to me by long experience in my own flocks; I shall only now mention one of the most decisive proofs. A flock of rams and ewes were sent out to my sheepfold last winter, under the most unfavourable circumstances: They had to go two hundred leagues, the ewes were big, the season very severe, and the ground covered with snow. As soon as I was informed of the journey, I wrote to stop the farther advance of the flock; it was then fifty leagues from the fold, the ewes had dropped on the road, the lambs, and many of their dams, had died; both rams and ewes had

lost almost the whole of their wool; they were emaciated, and covered with scab. A perfect cure was speedily effected, by the application of the ointment for which I before gave a recipe. At present they are in excellent condition.

"This same flock is estimable for the excellent quality of its fleece. On it is founded my experience concerning the amelioration of wool. To this, the sound health of the ewes, and principally of the rams, is absolutely necessary; hence I resolved to enquire with ardour into the means of preserving it, and of re-establishing it when disordered.

THE SIGNS OF HEALTH IN SHEEP.

"A sheep is in good health when he carries his head high, when the eye is of clear azure, quick and open eye-strings, and gums ruddy, teeth fast, the face and muzzle dry, the nostrils damp without being mucous,

the breath free from any bad smell, feet cool, dung substantial, the mouth clean and of a lively red, all the limbs nimble, the wool firmly adhering to the skin, which ought to be red, (especially on the brisket) soft, and supple, a good appetite, the flesh reddish, and particularly with good veins, and the hams strong. To know the two latter perfections, the shepherd places the sheep between his legs, and grasps the head with his two hands: with the thumb of the right hand he raises the eye-lid from above the eye, and with the thumb of his left hand pulls down the under eye-lid: he then looks at the veins of the white of the eye: if they are very apparent, if he finds them of a lively red, if the flesh at the corner of the eye, and at the side of the nose, is also of a lively red hue, it is a sign that the animal is in good health. To know if the ham is good, the sheep must be seized by one of his hind legs; if he struggles much to get back the leg, if much force is necessary to hold it, it is a proof that the animal is strong and vigorous, in that part.

"Sheep are often seen in the market with nose and eyes running, or, as we should say of a horse, almost glandered. This happens in consequence of wet layers during their travel in cold windy seasons; a continuance of such weather, with perhaps subsequent neglects, contribute to lay the foundations of diseases, of which, afterwards, the cause is not suspected. Great caution is necessary, during *drifts*, that the flock be not suffered to rest on wet and boggy layers, and that they are provided with dry lodging, and sufficient keep to support their strength; and if, on their arrival at home, any sinister appearances should be visible, it will be a great saving to nurse and recruit the sheep a while, in a good dry sheltered yard."

MEMOIR

On the most necessary Regimen for Sheep. Read at the Meeting of the Royal Medical Society of Paris, 31st August, 1779. By M. DAUBENTON.

"A GOOD regimen is necessary to the preservation of the health of sheep; hence, too, one of the best means of curing their disorders. Attention should be paid to the choice and quality of food placed in the rack, as well as to that which they crop in the fields; because from such is derived their sole nourishment in bad seasons, and because the most succulent pasturage is the most dangerous.

"Tares, trefoil, lucern, clover, and all those grasses equally relishing to sheep, and favourable to health, may prove mortal if

taken in too great quantity. The air which they engender, swells their greatest stomach like a balloon, the tension obstructs rumination, and the increase of the size of this stomach compresses the large vessels, stops the circulation of the blood, and causes death, if speedy assistance be not administered to facilitate the evacuation of air by the bowels, or the passage of blood in the large vessels.

"The richer and more succulent the pasture is, the more should the shepherd be distrustful of it. To such he should drive his flock only when they are already partly satisfied, suffering them to remain there but a short time.

"Grasses, hurtful by their bad qualities, are much less to be feared; sheep do not eat of them, although pressed with hunger. Of this I have to offer some convincing proofs.

"In a small space, formed by four hurdles, I enclosed two sheep; for these animals are so accustomed to herd together in numbers,

that if a sheep finds itself alone, it is always restless, and endeavours to join company. I caused to be placed successively in the rack, for the two sheep confined within the small space, plants of a noxious quality, or supposed to be so, such as euphorbiums, bryony, ranunculus sceleratus, tuberous ranunculus, and many others. The euphorbium and bryony remained untasted in the rack from morning till night; the sceleratus and tuberous ranunculuses, on the other hand, were devoured with eagerness. During eight days, only one of these plants was given as their sole nourishment; and every day water was brought them, of which they drank very little, or refused to drink; which evidently proves, that these plants do not affect sheep, although very bitter, the tubercules of the tuberous ranunculus especially so. These proofs appear to me decisive, since a sheep passes a whole day without eating, and offers not to touch a particular plant in his rack, he will never eat this plant in the fields, where others

more to his taste are to be found. One plant which has been the sole food of a sheep for eight days without any apparent bad effect, is still less an object of suspicion in the fields; for we do not find that sheep prefer it always to the other plants which they there find.

"Shepherds, it appears, have little to fear as to the regimen of sheep in a good pasture, except the too great quantity of succulent food which they may devour; but the fodder given in the racks should be carefully attended to.

"Sheep take a disgust to their provender, when it has contracted a taste or a smell disagreeable to them. Thus, hay suffered to grow rusty in the fields, heated, or grown mouldy in lofts, exposed to the exhalations of dung, or tainted with rats, is bad aliment; causing stronger ground for apprehension when not quite so much spoiled as to be absolutely rejected by the sheep, but sufficient only to prevent them from taking a proper quantity. In the latter case,

may be almost always dreaded in countries where the pasture or provision are not abundant.

" It is requisite then to know how to proportion the number of sheep in a flock to the quantity of food which can be furnished them; this is an essential point in the regimen of these animals: But what rule are we to follow, in order not to be deceived in this calculation, and consequently to maintain as many sheep as can be well fed?

" I have endeavoured to resolve this problem, which appeared to me as of no small importance to the landed proprietor, to agriculturists, and, in general, to the prosperity of manufactures and of commerce.

" I confined in a small space two sheep about twenty inches high, (the height of most woolled animals in France). By way of experiment, I caused the sheep to be fed during eight days solely upon grass, newly cut, and weighed before placed in their rack. Care was taken to pick up and place in it back again all that the sheep let fall, and to weigh that which they would

not eat in consequence of its being too tough, or because it possessed some bad quality. From this trial, frequently repeated, it appeared, that a sheep of the middle stature eats about eight pounds of grass in a day. The same experiments, conducted with the same preciseness, in regard to the fodders of hay or straw, have proved, that a sheep of middling height likewise eats daily two pounds of hay, or two pounds and a half of straw.

" In order to ascertain how many pounds of grass go to one pound of hay, I caused the grass to be weighed as soon as cut; it was then spread on cloths exposed to the sun, so that none might be lost, though, at the same time, well dried. Being thus converted into hay, I found its weight reduced to one fourth; eight pounds of grass had only given two pounds of hay.

" Agriculturists know how many cart-loads, or trusses, a field can produce; consequently, they may judge how many sheep it can maintain in hay or in grass. They

have a rule, then, for proportioning the number of their sheep to the quantity of pasture and fodder they can supply them with.

" Having determined the quantity of solid food essential to the good regimen of the woolled kind, I made other experiments upon these animals, in order to know at what time they should drink.

" It is well known that they seldom drink when they feed upon fresh grass, but stand in want of water when fed on dry meat. Different opinions are pursued as to the proper time for watering them ; in some countries they are taken to water once or twice every day, in others, not for one, two, three, or four, even five days. By the following experiments, I have endeavoured to ascertain which of all these regimens, so different from each other, is entitled to preference.

" I shut up in a stable, in the depth of winter, a small flock, of which all the sheep were marked with a number. They were kept night and day without being suffered

to quit it, and fed with a mixture of straw and of hay, without any other aliment. Each day a shepherd carried in his arms, successively, some sheep out of the stable, to let them drink in my presence, out of a vessel, gauged at different heights, and then took them back into the stable, when they had either drank, or refused to drink.

"By this method, I knew how much water the sheep had taken when presented with it once, twice, or thrice each day, or only once in two, three, four, or five days.

"Most of the sheep in this little flock passed a month in the stable without drinking; their appetite was always the same, and they experienced no other inconvenience than that of thirst, of which they gave evident proof, by running to lick the moist lips of those carried back to the stable, on return from drinking.

"The result of these experiments, which I cannot here detail, led me to conclude, that sheep, with no other nourishment than that of dry hay, and within reach of water,

could pass days without drinking; but they would take a greater quantity of water the following day, than if they had drank the evening before; this quantity increases to a certain degree, if they have been deprived of water for many days together. They are then tormented with thirst, for they are eager to get a drop of water; if they could find it in abundance, they would drink too plentifully for their temperament, subject as they are to effusions of serosity, which produce mortal hydatides in the brain, and the rot, a disease no less fatal.

"The best plan is to drive the flock every day to the pond, and to make it pass slowly, without stopping there; by this method it will be found, that the sheep who really want to drink, will be the only ones who will drink.

"In countries where water is scarce, it frequently happens that the pond is far distant, and the flock cannot be driven to it without being fatigued; in this case they may pass many days without drinking, but

when fed only upon dry meat, it must not be delayed too long.

"This aliment differs much from fresh grass, in consequence of the loss of moisture by drying; yet sheep take daily the same quantity of solid food, whether in grass or in hay. In the experiments before mentioned, I found their appetite perfectly equal, for they eat eight pounds of grass, or two corresponding pounds of hay, which I found to be the product of eight pounds of grass. The evaporation which carried on during the making of the hay, takes off three-fourths of the substance of grass in fluid particles; thus the sheep, which eats two pounds of hay, is deprived of six pounds of liquid aliment, which it would have had by eating eight pounds of grass. It supplies a part of this deficiency, by drinking about three pounds of water when fed upon hay; but this water is not in sufficient quantity, and possesses not the same quality as the liquid of the grass evaporated in drying.

"There can be no doubt that this difference in regimen is productive of bad effects. I shall mention some proofs of it, which are indeed too evident, and too frequent.

"In countries where the snow remains upon the ground for one or two months, the cattle is reduced to dry fodder so long as it lasts; then the weaker sheep, and chiefly the lambs, the sheep of the second year, the pregnant ewes, and those in milk, languish and drop off. Shepherds denote this miserable state by saying, they *melt their fat*: they certainly grow very lean, and fall off in great numbers.

"I have often reflected upon the cause of this evil, and the means of preventing it. After having prosecuted every enquiry I could think of, it appeared to me to arise solely from a change of diet too suddenly effected. In one day, the sheep are reduced from eight pounds of grass, to about two pounds of dry fodder, and three pounds of water. They are thus deprived, therefore, all at once, of three-eighths of their

wonted nourishment, and these three-eighths composed the half of the fluid part of it.

" According to my experience of the quantity of water taken by sheep, it appears, that their drink can only supply one-half of the liquid which grass contains more than hay. It would be dangerous to excite them to drink a greater quantity of water, because they are very subject to infiltrations. We must, therefore, endeavour to supply them with at least a small quantity of fresh food every day, in order to correct the bad effects resulting from dry meat.

" The most sensible of these bad effects appears in the third stomach, composed in the interior of a great number of membranous folds, detached one from another, although it is only from eight to ten inches in circumference when filled with air. During rumination, the food passes from the throat into this third stomach, and spreads amongst all these folds. I have there found it very frequently parched, and almost withered, in many sheep which I have dissected.

"This aliment, after having been ruminated, receives, in the third stomach of the sheep, and of other animals that chew the cud, a preparation for digestion, which latter takes place only in the fourth stomach. The aliment is dry in the third stomach, not only when the animal is fed solely upon dry meat, which has not furnished sufficient liquid, but also when attacked by some disease causing too great heat, and consequently too great evaporation of the liquids necessary to digestion. In these two cases, bad digestion, and the evils attending it, may be prevented by giving some green food at least once a day.

"At all times, when the ground is not covered with snow, sheep find upon it sufficient fresh food to render it unnecessary to give them any in the rack, with their dry meat, in a bad season. I have often stopped in the midst of a flock, in fields half covered with snow, where no grass whatever was to be seen. The sheep, however, having their eyes nearer to the ground, per-

ceived the points of some leaves, and scratched with their feet to find more of the plant; they then seized it with their teeth, and sometimes pulled up the roots along with the leaves. But when the snow entirely covers the ground to a certain thickness, there is no other resource than in the plants which are high enough to enable the sheep easily to remove the snow which covers them.

"There are some kinds of cabbages, such as the *fringed cabbage*, which are very tall; they resist the frost, and their leaves contain much juice. These form an indifferent article of food for sheep, in times when they are not reduced to dry meat; but, if confined to this aliment, a few of the leaves of these plants will be found sufficient to obviate its prejudicial effects.

"It is difficult to have a quantity of these cabbages sufficient for numerous flocks; they require to be sown, transplanted, and watered for many days; and this culture must be repeated every year, which is too tedious and expensive for the husbandman.

Whatever advantages may attend the use of cabbages as a diet for sheep, I would not recommend this plant as fodder, had I not met with a species of cabbage which may be reared without sowing, without transplanting, or watering. It is equally unknown to the naturalist and to the agriculturist. Like the fringed cabbage, it resists the frost; and, for cattle, is preferable to it, being very easily cultivated. It may be propagated by cuttings; it is only necessary to slip off its lateral-branches, which are numerous, and plant them in the earth, to have, in a short time, new plants over the whole extent of a well cultivated field. The leaves are less than those of other cabbages; but the juice they contain is as abundant; they are equally good food for the shepherd, as well as his flock; some handfuls of these leaves given to a sheep, will correct the bad effects of dry food.

"The regimen of sheep is one of the most important branches of veterinary medicine. This science is to be established

only by well-founded experience, with observation and experiment frequently repeated on these animals. An intimate acquaintance with them in their natural state, is necessary before attempting to cure their diseases."

AN

ACCOUNT OF THE SHEEP POX,

(Petite Vérole, Claveleé, Claveau Clavin.)

TRANSLATED FROM THE FRENCH OF

M. VITET.*

"THE Sheep-pox manifests itself by inflamed pustules raised above the skin, especially on the parts least covered with wool; such as the belly, inside of the thighs and shoulders, the nose, nipples, and beneath the tail. The eruption is retarded or accelerated, according to the temperature of the air, the strength, age, and temperament of the individual. It is commonly completed on the fourth or fifth day.

* *Médecine veterinaire, par M. Vitet Docteur et Professeur en Medecine, 3 tomes 8vo. A Lyon,* 1783.

The pustules are of several shapes, and of different colours; being sometimes round, sometimes oblong; at first they are always red, they afterwards become white and soft, suppurate, dry, and form a black crust, which falls off spontaneously.

"This disease, which is peculiar to sheep, communicates itself readily; the shepherd, therefore, ought to be particularly attentive to the symptoms announcing it, in order that he may immediately separate the infected animal from the flock. The loss of appetite and depression, which precede it, are always proportional to its violence; for the more severely sheep are to be affected, the less they eat. As soon as they are infected, they cease to ruminate; their eyes become heavy, swollen, and watery; the eyelids are often glued together; sometimes the animal remains in one place, drawn together into as small bulk as possible, absorbed, the head hanging to the ground, the tail between the legs, their hind legs gathered towards their fore legs; they are oppressed;

their sides beat; if they recover, the wool falls off from the places on which the eruption appeared; their fæces are nearly the same as in health. When ewes with lamb are infected with the sheep-pox, they are apt to abort, the danger is very great, and the pustules are small and few. It has been observed, that the fœtus of ewes which have died of the sheep-pox, had no external mark of the disease; that a sheep once affected by the sheep-pox, is never attacked with it again; that three strong rams remained during the epidemic in the midst of the diseased sheep, without experiencing any effect; and that none of the lambs of infected sheep were attacked, although they sucked their mothers.

"The same observers have always found the lungs of sheep, carried off by the sheep-pox, inflamed, covered with hydatids of a dark purple colour, and marked with livid spots; on drawing the finger along the exterior surface of these organs, they distinctly perceived small tubercles or knots; the liver

was studded with hydatids, and the vena porta filled with fluke-worms.

" If a flock begin to be infected by the sheep-pox, the sick must be immediately separated from the sound, and put into a clean fold, well aired, and at a distance from the other houses. If the heat be considerable, they must be folded night and day near a wood, and protected from the sun; or they may be kept in a large and well situated shed, and fumigated twice a day with vinegar and frankincense. Two ounces of blood may be taken from the jugular vein on the first attack of the disease, if the disease be confluent and malignant. Once a day they must be made also to drink water, with a little meal and salt; and get for food only a very small quantity of bran, moistened with water saturated by sea salt. If the eruption be favourable, it is unnecessary to employ any remedy; but if the inflammation be too violent, the bleeding must be repeated: they must get twice a day a drachm of nitre, with a sufficient quantity

of honey to make it into a bolus; and both evening and morning they must get as drink, whey, or juice of lettuce, or meal and water, holding in solution a drachm of nitre in three pounds of fluid.

"If the eruption be tardy in appearing, or if the pustules have in part receded, it is proposed to give them once a day a bolus of the size of a nut, made of equal parts of *assa fœtida* and laurel berries reduced to powder, and to feed them with hay, bran, and oats, mixed with a spoonful of sulphur to each animal each day.

"In this case, I would prefer the following bolus:—Take of gentian-root two drachms, wood-soot one drachm, and honey a sufficient quantity for a bolus; and I would prohibit the sick all sort of food, and allow for drink only barley-water more or less saturated with sea-salt, and a little bran moistened with water saturated with sea-salt. If the cold be intense, collect all the infected sheep into a clean fold, and in which the air may be easily circulated.

Fumigate them with an infusion of sage leaves in vinegar; add every day to the bran given them for food half a drachm of gentian-root, unless the inflammation be violent, or the pox very mild.

"Blisters applied to the bare and fleshy parts may produce a serviceable derivation; though certain authors have advanced, that they have produced no sensible evacuation, even when applied for fifteen successive days. A hellebore seton, at the bottom of the breast, is attended with a more evident and perspicuous advantage. When the sheep-pox begins to attack a flock, insert a seton of horse hair into every sheep, however well it may be. If the purulent matter which flows by the seton does not preserve all the sheep from the pox, at least they will not be exposed to such evident danger.

SPECIES I. *Mild and distinct small-pox.*
(The mild sheep-pox.)

"The eyes, the situation of the head and ears, bespeak little sickness. The animal eats, and continues to ruminate; the eruption is complete, on the fourth day, and the pustules are distinct. For four or five days they continue hard and red; then they become white, soft, dry, and are changed into black crusts, which fall off spontaneously sometime afterwards. The head is a little swollen, and becomes heavy; the eye-lids also swell, and the pustules appear particularly on the nose, the cheeks, and even the eyes, which last, though the eruption be mild, are often destroyed by a rapid and copious suppuration.

"This species of the disease is propagated both by immediate contact with an infected animal, and by the air when charged with variolous poison. For if a sick flock meet

one which is sound, the infection is communicated without actual contact; and it sometimes happens, that the disease, although mild in the former, becomes malignant and confluent in the latter.

"The first and most essential remedy, is to place the affected sheep under a shed, or to confine them in a field; taking care at the same time to guard them against the bad effects of the rain and the sun. Their food must be moderate, a pound of bran moistened with a small quantity of water; and for drink, two pounds and a half of water, with a drachm of sea-salt in solution. Some practitioners recommend giving them, during the whole course of the disease, as much hay, oats, and bran, as they will take; to which must be added, half an ounce of flower of sulphur in powder, or two drachms of nitre or sea-salt in the day. These medicines are supposed to favour the eruption, abate the inflammation, and expel a part of the variolous virus by urine.

"If sheep were to eat only as much hay

and oats as is necessary to support their vital strength, their aliment, in my opinion, should be left to their own discretion; but as they only consult their gluttony, they take always too much food. It is therefore better that they should suffer from deficiency, than from excess. It is for this reason, that, in the mild pox, we content ourselves with giving daily a pound of soaked bran to each sheep, and with making them drink once a day barley-water mixed with a little salt.

"When the eruption is repelled or suppressed by the action of too cold an atmosphere, or by any other cause, such as rain, the application of fresh water, the bad qualities of air, aliment, and remedies; when the pustules are small, whitish, pointed, varicose, and few; when the head becomes heavy, and the animal loses its appetite; it is proper to give to each sheep a bolus, made of fifteen grains of gentian-root, a drachm of nitre, and two drachms of the extract of juniper, and to add to the barley-

water allotted to each sheep a greater quantity of salt. It is probably to suit this indication, that Hastfer advises to separate the sick sheep from the rest of the flock, and to keep them in a house closely shut up, and to give to each affected sheep a grain of civet dissolved in a spoonful of brandy or five drops of oil of wood-soot, or six or seven drops of volatile alkali, or a drachm of theriac, then to confine the sheep crowded together, to make them sweat, and not to give them that day any food till three in the afternoon; and when the pox are not abundant, to puncture them with a pin, and to press out the pus, after which they dry spontaneously. While the sheep are sick, he prescribes a good diet, and half a handful of salt, but no water. He informs us, that in summer the best remedy is to rub the limbs, the eyes, the ears, and the mouth, both before they go out in the morning, and when they return in the evening, with the following decoction:—Take a

handful of alder leaves gathered in the spring, and beer two pounds and a half, and boil it to a viscous consistence. Strain and preserve the liquor, and dip into it a pencil or a brush to rub the affected animal. He recommends in autumn lovage, and the root of bastard female cupatory in powder; the dose being a hatful for a hundred sheep, mingled with thrice the quantity of salt. During the whole course of the treatment, he wishes them to be pastured on dry soil, or in places covered with heath, and brought home before the cold of the evening commences; for it is better to keep them warm in their folds, than to expose them to the least cold, which is always prejudicial to sheep attacked with this disease. When the north wind blows with violence, and is attended with snow and frost, the shepherds ought to keep the affected sheep warm in folds, vast, clean, and raised in the floor, to keep them at a little distance from one another, to prevent them from sweating, and frequently to renew the air. In spring, summer, and autumn, these precautions are un-

necessary, it is sufficient to preserve them from the sun and the rain.

SPECIES II. *Confluent Small-Pox.*

Malignant Sheep-Pox.

" As soon as the sheep are affected with the malignant pox, they lose their appetite, and cease to eat; they become thirsty, and leave off ruminating; their eyes are swollen, full of tears, and obscure; the eye-lids are often glued to one another, and the head is considerably swelled; a humour flows through the nostrils, thick, tenacious, for the most part white, seldom yellow. The eruption, in general, is so considerable, that the body is covered with inflamed pustules, confluent and numerous, especially the cheeks, the nose, the eyes, and the inside of the thighs and shoulders. If the animal be touched, he appears to feel exquisite pain; if he be seized by the neck, he falls, it may be said, into convulsions; if he be caught by

the wool of the back, he falls down, and cannot rise without difficulty; through loss of strength, he is unable to follow the flock, gets dull, and continues in one place, drawn together into as small a volume as possible; very great difficulty in breathing then supervenes, and considerable palpitation of the sides; the breath is insupportably fœtid; the pustules become purple, die away without suppuration, and become black. The animal for the most part dies on the third or fourth day after the eruption; but if it survive the fifth or sixth day, a cure may be expected, which however is seldom completed in less than fifteen days or a month, and very often two, after the eruption.

"To correct the bad qualities of the variolous poison, to favour its efflux out of the body, to hinder or diminish its action on the parts essential to life, the following directions must be observed:—For this purpose, two ounces of blood must be first drawn from the jugular vein, and the fold in which the sheep are kept must be per-

fumed with an infusion of the leaves of sage and equal parts of spirits and vinegar. Barley-water must be given them for their food and drink; and if whey can be got, a pound and a half must be given them each day, adding to it a small quantity of sea-salt. It is a mistaken idea that we ought not to give sheep either aliment or remedies in a liquid form; evening and morning, therefore, you will make them take a glass of barley-water, saturated with nitre; or the bolus, so much esteemed in curing the inflammatory diseases of sheep, must be given, consisting of equal parts of nitre and wood-soot, combined with a sufficient quantity of honey.

"At the commencement of the disease, two large blistering plasters must be applied to the inside of both thighs, made of three parts of Spanish flies, one part of mustard, and two parts of dough. To facilitate the effects of this, the inside of the thighs must be shaved, the blisters changed every twelve hours, or repowdered with the flies, until a suppuration be established, and the ulcer is

then to be dressed with suppurating or digestive ointment. A seton, with the root of hellebore, powdered with Spanish flies, or besmeared with ointment of beetles, is still more essential than the blister, on account of the speediness of its action, and the more abundant suppuration which it produces.

"Sudorifics, purgatives, and the most celebrated alexipharmics, such as orvietan heriaca, and volatile alkali, are to be rejected. They disturb the efforts of nature, they derange the coction of the virus, and are inimical to a favourable crisis.

"But to avoid the fatal effects of the malignant pox, might not the purulent matter contained in the pustules of the mild pox, when they are whitening, be inserted into a wound made in the integuments which cover the legs or the breast? The advantages of this inoculation would be evident, if the greatest part of sheep were affected with the pox; if a sheep attacked by the mild pox had never communicated to others the confluent pox; if the mild and

the malignant pox had never been observed at the same time to affect individuals in the same flock; if it could be proved, in a satisfactory manner, that a sheep is only affected with this disease once in its life; if the inoculated sheep enjoyed as perfect health as before inoculation; if it were possible to prevent the greatest part of the troublesome circumstances attending this disease by a preparatory regimen, by inoculating in spring or autumn, and by chusing for this operation, only those sheep which are young, vigorous, and healthy, those who have lambed, or which have ceased to give suck, &c.

"As none of these facts have been proved, it may be presumed, that the inoculation would do more harm than good; and the rather, as the greater number of flocks, inhabiting the mountains, are seldom affected by the pox; as a flock attacked by the mild pox, has often communicated the confluent to another flock; as well informed shepherds have assured me, that they have seen sheep twice attacked in their life;

that they die on the second attack, and as inoculated sheep are less healthy than formerly. Observe any sheep attacked with the mildest scab, does it ever acquire the vigour of an unaffected one after its cure? In fine, it is impossible to find means to prepare the sheep for receiving the virus, so as to experience the least possible evil from it. The best means, if we may use the expression, would be at the most, to seize the moment when the sheep is in the highest state of health."

"In the 25th volume of the *Journal Generale de Medecine*, conducted by M. Sedillot, there is an analysis of a report published upon the vaccination of sheep, and the sheep-pox, by a committee of the Agricultural Society of the Department of the Seine and Oise. From their experiments on vaccination, clavellization, and counterproofs of all kinds, it appears that vaccination has, in general, produced upon sheep only a local, feeble action, very much inferior to that on the human body. It does not ap-

pear ever to have affected the general system of the sheep; nor to have excited the slightest swelling in the vessels or glands in the neighbourhood of the part inoculated. But it was found impossible to communicate the vaccine disease to sheep, which had had the sheep-pox either recently, or at a distant period, while those which never had had the sheep-pox were very easily affected.

"Clavellization produces upon sheep an action creating tumors and pustules, rapid in its progress, though characteristical, and accompanied with symptoms of general affection: the effects of the sheep-pox virus are more disorganizing, and present a more malignant character, than those of the small-pox virus. On sheep the vaccine disease seems entirely to lose the energy which it exerts on the human system; therefore," say the committee, "we need not wonder at the little advantage we have obtained from endeavouring to resist the sheep-pox by vaccination; but although our attempt has not succeeded in that respect, our attention and

experiments have not been unproductive of advantage, since they have led us to positive results, which were the principal objects of our researches, and which are always far better than uncertain conjecture.

" But in waiting until we discover if the thing be possible, the means of giving the vaccine disease in sheep the degree of energy necessary to render it a preventive of the sheep-pox, such as it is generally allowed to be of the small-pox; we cannot but recommend to the proprietors of flocks, the practice of clavellization, or inoculating with the sheep-pox. This has appeared to us to bear the same relation to the sheep-pox, that variolous inoculation has to the small-pox; for if our experiments had led us to presume, that vaccination does not preserve sheep from the most formidable of their diseases, they have also satisfied us, that the sheep-pox is rendered so mild by inoculation, that it is perhaps possible to secure a whole flock without the loss of a single individual. If it be determined to put cla-

vellization in practice, the necessity of conforming to the following observations, the fruit of the experience which we have acquired, will be recognised.

"The inoculation of the sheep-pox has given rise to putrid suppurations and gangrenous eschars, which, on falling off, have left large and deep sores; we must, therefore, take care not to inoculate upon the scrotum, upon the knee, or the nipples, or upon muscles, tendons, or aponeuroses, which are not separated from the skin by much fat and cellular membrane. The most proper places for this operation appear to us to be at the fall of the shoulder, behind the tail, and above the flank. To clavellize with success, it is sufficient to make superficial punctures without drawing blood, between the cuticle and skin, with a lancet or flat needle, armed with the matter of sheep-pox, and to deposit in it a small quantity of that matter. We have seen forty-five sheep inoculated with the sheep-pox indiscriminately mixed with others in-

fected by the contagion, without the effects of the clavellization appearing to be greater, or more malignant, upon these than upon others which were kept apart after the operation. This observation, which is important, from the advantageous consequences which may be derived from it, proves, that the sheep-pox, communicated by inoculation, is much more rapid, and much milder, than that communicated in the ordinary way by herding together, since the effects of inoculation appear on the second day after the insertion of the matter; while on those that are naturally infected, it does not appear till the fifteenth or thirtieth. It is known, that when the natural sheep-pox affects a flock, it is tolerably mild at the beginning and end of the epidemic, and that its effects are most fatal upon those animals which are infected the second month, or, as our shepherds call it, the second *round*. There as soon as a few of a flock are infected with the natural sheep-pox, they are sure of having time to preserve all

the others from its ravages, by not delaying to inoculate them.

"Therefore, when we consider, in the first place, that the sheep in a flock infected with the natural sheep-pox are successively ill for at least four months, and that sometimes the half of them die; while, on the contrary, by means of inoculation, in twenty-five or thirty days a flock may be relieved from, and for ever rendered proof against the most noisome, as well as the most fœtid and most destructive disease of sheep, and that in one hundred we do not perhaps run the risk of losing one; and, in the second place, that this operation, performed by a dexterous sheep-doctor, would not require from him three or four visits to superintend its progress in a whole flock; it is impossible to hesitate between a process so simple and œconomical, and the anxiety, infection, and immense loss to which proprietors expose themselves by quietly submitting to the epidemic ravages of the natural disease."

AN

ESSAY

On the utility of encouraging the system of Sheep-Farming in some districts of the Highlands, and Population in others. Addressed to the Honourable President and Members of the Highland Society.

MY LORDS AND GENTLEMEN,

"As many of the letters which I wrote to you are rather of a light nature, and the remarks on the farming of the Highlands scattered and interwoven through a great number of other subjects, trifling and whimsical of themselves, and calculated rather to afford amusement, than lead to any solid disquisition; I think it proper, in a supple-

mentary essay, to take a retrospect of the subject in a general point of view.

" And certainly this subject, which comprehends such an extent of valuable country, and such a number of valuable people, ought not to be treated with levity; but is in a higher degree worthy of investigation, than any other to which the tourist can direct his attention, or the theorist his scrutinies. It is a subject which, at this very time, forms the principal topic of conversation amongst thousands, and on which the whole Highlands is divided, one district against another, one family against another, and even individuals of a family against others of the same family, *viz. What stock is most proper for the Highlands?* It is a subject which may be entered into with warmth, but not with prejudice. Where the writer must produce a statement of facts, and convince by reason, not by assertion; and on which it is impossible to reason accurately without a personal acquaintance with the local situation of the different coun-

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established custom in the south
l, that one cow stands for ten
where the black-faced sheep are

tries in the north and west of Scotland, with the manners and propensities of the inhabitants, and indeed with every branch of their rural economy.

"To attain this knowledge, and to be certified of facts, without the assurance of which it was impossible to throw a proper light on the subject, the foregoing letters will bear sufficient testimony, that I have neither spared time nor trouble, nor even expences, as far as my circumstances would permit. I have traversed all the pasture countries * betwixt the firths of Tay and Dornoch, and visited every principal glen and island between Cantyre, the heights of Assynt, † and Butt ‡ of the Lewis. I have conversed freely with every class of men,

* This is a term frequent through all the Highlands, to denote a glen, or valley, or district, separated from others by ridges of mountains.

† A country belonging to the Countess of Sutherland.

‡ The north-west corner of Europe, otherwise called Oreby Point, in the isle of Lewis.

from the peer of the realm, surrounded by his friends and menials, to the peasant who wanders barefooted and half naked among the Grampian deserts; and after all, I am conscious of much deficiency in point of information.

"It will be expected, that, in the first place, I shall state the proportional increase and value of sheep and black cattle, with the extent and nature of the land necessary for the sustenance of each in the same proportion; and I am certain that, in the common way of reckoning, that of taking a given number of sheep, against a proportional number of cows, and counting the profits and losses of each, without considering the situation of the farm, they will come very near to the same amount. I have tried the estimate every way, and found it so; however, we shall take the average prices of last summer, and make the experiment.

"It is an established custom in the south of Scotland, that one cow stands for ten sheep; and where the black-faced sheep are

the stocking of the farm, the cow and calf are reckoned the weightiest sum, * not so much from the quantity that they eat, as from their nicety in the choice of their food. In the Highland districts, however, this thesis will by no means hold, the cattle being smaller, and even more than proportionally easier maintained; and were the soil of the Highlands as grassy as that in the south of Scotland, I durst venture to state the proportion as one to five. But as a mossy surface prevails to such a degree throughout the Highlands, and as the sheep will feed more than three times as much on heather, and such coarse herbage as is peculiar to moss, as the cattle will, the statement must be in a medium between the above: I will therefore venture it as three black cattle

* Though this is properly an indefinite term, it is applied in the south of Scotland to the grass of ten sheep, one cow, or nineteen pecks of oatmeal, Edinburgh measure. Of all these, a shepherd often gets his choice, and they are called his sums.

for twenty sheep, which is certainly as near the truth of the balance as reason or experience can come, but this supposing them to be confined to the same bounds. We shall then place one hundred sheep against fifteen cows, which we shall suppose all to live and thrive, the risk of accidents and diseases being much the same; as there are a great many more lives in a stock of sheep, there must of course more lives be lost; but, as far as I could learn, there was a proportion as one to five of the above numbers. The trembling prevails amongst both sheep and cattle on some seasons, and the black-spauld * keeps at least up-sides with the

* This is a distemper to which the young cattle on the Long Island, Sky, and others of the western countries, are very much subjected. It commences by a painful swelling on one of the limbs, which by degrees mortifies, and commonly causeth immediate death to the animal; it is besides very infectious; on attacking his herd, the farmer commonly causeth the byres to be fumigated; the flesh of the animal hath the very same colour and effluvia with that of a sheep which dies of the sickness or braxy.

braxy. We shall also suppose our sheep of the black-faced Scottish breed, as it is still a controverted point, whether the fine wooled race are a suitable stock for that country, and we shall, in the first place, begin with them in lambs and calves.

" On the first year, viz. on the first year of a lease, from Whitsunday to Whitsunday, we have no returns from our sheep; on the second year, they cast us a fleece each, and no further profit; on the third year, they again cast us a fleece each, and eighty lambs, which is allowing every fifth gimmer * to be eild. † That this is above an average, the following instance may serve to confirm: Mr Thomas Gillespie last year, on the farm of Inchlaggon, in Glengary, wintered for the first time 600 gimmers of the finest Cheviot breed, and although a

* Gimmer is a term used to distinguish the females of a stock of sheep, during the second year of their age. The wedders of the same age are called Dinmonts. The next year the females are denominated Twinters, being a contraction, I suppose, for two winters.

† Eild is a Scotch word to denote a sheep without a lamb, a cow without a calf, &c.

long course of experience hath given evidence of the goodness of the soil, it hath no better an appearance than many other Highland farms, from off which the returns are trifling. The sheep were in excellent condition; the lambs were so good, that a great part of them were fit for stocking, and one twentieth gimmer was not eild. As our eighty lambs are small, we shall reckon them only at seven shillings per lamb: we have besides fifteen stones of wool, which is the common average of a stock of the black-faced breed; they would indeed have considerably more for the first two years if smeared, but as they would probably have as much less on the sixth and seventh years, we shall take the fifteen stones for our standard all along, and count it nine shillings per stone. On the fourth year, the lambs are as good, or nearly so, as ever they will be, and we cannot suppose fewer than ninety lambs, which we shall reckon at 9s. per lamb. On the fifth year, it will be necessary to sell twenty of the worst looking

ewes, and to replace them by keeping twenty of the best ewe lambs: as ten of the sale ewes are eild and in good condition, we shall estimate them at twenty pounds, and still we have seventy lambs at nine shillings a piece. On the sixth year, one half of the remaining eighty must be sold and replaced by lambs, these ewes at eighteen shillings a piece; and forty lambs, at nine shillings a piece, constitute this year's profit; but we have the wool each year over and above this statement. On the seventh year, the remaining forty old ewes must be sold off, and their lambs kept in their place; and this year we have nothing save the forty ewes, and the wool to dispose of, excepting a few gimmers' lambs, of which we shall make no account, as we may be obliged to buy our ewe lambs dearer than we sell our wedder ones. Thus it appears, that at the end of seven years, the clear profits from an hundred lambs is 250l. 10s. from which we must deduct 50l. laid out at first, as the price of the lambs: after subtracting this, the re-

mainder is 200l. 10s. Our stock at the term of Whitsunday, consists of forty hoggs, * forty gimmers, and twenty twinters, which we shall value at 1l. 2s. per sheep, which is 110l.; this, added to the remainder, makes 310l. 10s., the total value of stock and all; as may be seen in the following Table:

"I have estimated every thing rather below, than above the price of the present day, besides making several allowances.

A Table of the Septennial Returns from an hundred Lambs.

Years.	Ewes.	Lambs.	Wool.	Yearly Returns.
1	——	——	——	——
2	——	——	15	L.6 15 0
3	——	80	15	34 15 0
4	——	90	15	47 5 0
5	20	70	15	58 5 0
6	40	40	15	60 15 0
7	40	——	15	42 15 0
				250 10 0
Deduct as value of original stock				50 0 0
				200 10 0
Add as value of remaining stock				110 0 0
				L.310 10 0

* When lambs are smeared in October, they are denominated hoggs until they are fleeced next June.

"To make a proper estimate of the returns of black-cattle during the same period, is a much more difficult undertaking; and what one farmer will view as an accurate statement, others will view as the greatest absurdity. Throughout the whole Highlands this year I found the prices of sheep to bear the most exact uniformity, and in the most remote Highlands the lambs were rating highest; but this was far from being the case with respect to the cattle. To such a degree have the Highland breed of cattle been nourished and improved by some persons, and so much neglected by others, that in some places of Argyleshire I found whole droves fetching three times the price of others of the same age farther to the northwards.* To steer in a proper medium here is no easy task; but

* This assertion may seem an exaggeration; but the Duke of Argyle's oxen, and those of Shawfield from Islay, sold in Dunbarton at from 18l. to 24l.; at the same time those of the Long Island were selling at from 7l. to 9l.

it must be remembered that the pastures which these prime cattle graze upon, being of the finest description, are qualified to breed as large and as fine sheep as any land in Scotland, either in the north or south; and consequently greater returns may be anticipated from them, than the common average price of Highland short sheep, which is our standard. It is the prevailing custom throughout all the more northern Highlands and islands, to keep the male from their young cows, until they are outgone four years of age; thus they calve for the first time when they are exactly five. This is a fact which was related to me by many of the principal tacksmen, who added, that one which had a calf a year sooner could be distinguished all the rest of her life. On some of the coasts of Argyleshire indeed, and in the eastern parts of the Grampian-hills, they suffer them to calve a year sooner; therefore we shall suppose our fifteen cows to calve when four years of age; but as there is no possibility of disposing of them,

we must necessarily keep them through the winter; and the fifth year likewise expires before we can raise a farthing from them, saving the small overplus of milk that is saved from the calves. This, though rather a convenience than a profit, should not be quite overlooked, as it is the chief cause why the black cattle have so long stood their ground amongst all the poorer classes of tenants in the Highlands. It is nevertheless common with the principal cattle farmers, to keep a certain number of handsome cows, which they denominate *breeders*: these they pasture in a quiet place by themselves, while the whole of their milk goes to the nourishment of the young stock.

"Thus four years pass without any profits from our cattle; at the end of the fifth year we have fifteen steers to dispose of; these, at four pounds each, is 60l.; on the sixth and seventh summers we have the same, and at the Whitsunday following we dispose of our cows, and are just where we began with twenty calves. Our cows at

9l. each is 135l. * Thus it appears by the table, that on reckoning three cattle to occupy the same proportion of land as twenty sheep, the profits at the returns of certain periods are the same. But let us consider the soil and situation of the country in question.

"In the following description, I would

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* *A Table of the Septennial Returns from Fifteen Calves.*

Years.	Cows.	Steers.	Annual Returns.
1	——	——	—— ——
2	——	——	—— ——
3	——	——	—— ——
4	——	——	—— ——
5	——	15	L.60 0 0
6	——	15	60 0 0
7	——	15	60 0 0
			180 0 0
To which add as the price of cows			135 0 0
			L.315 0 0

From the above statement, it would appear, that the black cattle have rather the ascendancy; but the farmer paying rent so long before he makes any profit of his cows, more than doubly compensates for this; and if the profits of Cheviot sheep were taken, they would amount to a fourth more.

be understood as meaning the mountainous parts of the Highlands only; for although the whole country to the north of the rivers Forth and Leven be vulgarly called the Highlands, it is well known that the extensive and fertile plains stretching all along the shores of the German ocean, and often extending far amongst the mountains, may as properly be called *Lowlands* as either the Merse or Lothians. By the Highlands, then, I mean that vast range of stupendous mountains, deep glens, trackless forests, and populous isles, which break and intersect the ocean and the plain from the neighbourhood of Dunbarton to Cape-wrath: where the Gaelic language prevails, and the Highland garb is worn; where the hardy race of the ancient Caledonians have taken shelter from the incessant toils of agriculture, as their fathers did from the devouring sword.

"And at the first view of that country, every man, even the prejudiced at modern improvements and innovations, as he may

be pleased to call them, must acknowledge, that nature never intended it for the rearing of cattle, and no man will hesitate whether sheep or goats are the most feasible stock. For, in the first place, with respect to black cattle, one third of the whole country is out of the question, it being perfectly inaccessible to these animals. Yet amongst the rocks, where the cattle would never go in search of it, there the sheep receive the most nutritious of their food.

"The Highland hills are for the most part of a pyramidal form, very high, and commonly so steep and rugged, that to the eye of the traveller they have an appearance perfectly tremendous. The sides and banks of the glens and rivulets are commonly covered, or mixed, with a rich short grass, intermingled with numberless aromatic herbs and flowers. The extensive flats and sloping declivities around the bottoms and lower parts of the mountains, are covered with a coarse mossy turf, interspersed with thin sapless heather, which hath stood

in the same squalid form, since the time that it first made its appearance on the retreat of the universal deluge, mixed with some of the moss stalks, called ling and deer-hair. On some of these extensive tracks, where there are small interpolations of sand, or particles of granite washed from the sides of the mountains, quantities of a short bluish grass maketh its appearance, called moss-prie, or sword-grass. All from this upward, from the place where the strait ascent of the hills commence, and where they are free of naked rocks, they are invariably covered with fine heather, thick, green, and nutritious; or else with a green thinnish grass, somewhat more slender in the blade than that on the valleys. This, from its sweetness, attaches the sheep to it in great numbers, and fattens them amazingly. From the beginning of June until the beginning of October, although such hills are stocked with their usual quota of sheep, in traversing the vales you will rarely see one of them, they being at that season all ascended and lying

at their ease in the deep ravines and green stripes amongst the rocks, which though thin of soil, yet being frequently washed with fresh showers from the Atlantic, and the rocks refracting the rays of the sun, have a rapid vegetation during the summer months; and it is from these precipices that they are brought in autumn so strong and fat, that they are the admiration of those who have seen the country, and now see the sheep. This one circumstance, impartially considered, is of itself a sufficient proof of what I have long considered as a fact, namely, that till the Highland hills (I do not say valleys) are completely stocked with sheep, they will never answer the end for which the wise Author of nature designed them, nor ever bring their value to the generous and patriotic proprietors.

"But there is still another more powerful objection to a black-cattle stock, if a more powerful one can be, and that is the difficulty of wintering them; so that laying aside one third of the ground as inaccessi-

ble; yet the remainder will often summer three, nay ten, for every one that it is possible to winter. There being no such thing as out-field hay, or even natural meadow, to be met with in the most of that country, they are obliged to manure small lots with the dung of their cattle for that purpose; and it is really astonishing what prodigious extents of land some of them bring under tillage by the most awkward and laborious modes of agriculture imaginable, and often on a soil the most unfriendly to vegetation; and after all, it is next to desperate labour, their crops of black-oats being poor, backward, and uncertain; but all this is necessary to meet the exigencies of their cattle and families.

"This was chiefly, as many of them informed me, what opened the eyes of sundry individuals to the utility and propriety of a sheep stock. They observed, that their few native sheep, which wandered disregarded on their mountains, made shift to live comfortably by working off the snow with their feet, whilst

they were obliged to bestow their last pen of fodder on their starving cattle; and that the woolly coats of the former, resisted the sleety showers and boisterous blasts of these regions, keeping their possessors warm and quiet, whilst the bare cattle stood snuffing, shaking their heads, and setting up their backs like dromedaries.

"I was told by one ingenious islander, who had adopted the sheep system, and who declared that he had made more profit by them than he had made by farming all the rest of his life, that, if he could have wintered one half of the cattle he could have summered, he never would have altered his plan; but that in order to raise forage for them during the winter, he was obliged to keep such a number of hands, his land being all to till with the crooked spade, that they ate up the whole of his profits, and after all were pinched with hunger. Even this same circumstance, the necessity of keeping such a number of servants, is a great grievance on the cattle farmer. How

easy and agreeable is it to give orders to two or three shepherds, perhaps once or twice in a month, compared with raging and swearing in Gaelic, among a great retinue of ragged, emaciated wretches, whose natures did commence with sufferance, and time hath made hard in it. I indeed saw them working from light to night, subsisted on two small pittances a day, a small cake of black bread, and a little brochen at noon, and the same at evening. Those who were working at kelp devoured the shell-fish on the shore raw and alive: Is it any wonder to see the ladies of such houses loaden with bunches of keys?

"There is but one loss that I can think of, which affects the sheep-farmer only, and that is the ravages of the foxes. Slight as some may esteem this, in many places it is of a serious nature; and although in Argyleshire, and some places of Inverness-shire, they have, by indefatigable assiduity, greatly thinned them, yet in Ross-shire, Sutherland, and the Isle of Sky, their ravages are dread-

ful. The small tenants around the Loch-Brooms, and on the borders of Sutherland, take a most effectual way to prevent them: they never think of hunting reynard through the uncouth rocks, but they gather their flocks into houses every night of the year; by which plan, they not only deprive the foxes of their breakfast, but the lambs also. In the cots where they lodge them, they have frequently two apartments, into one of which they turn the lambs at night, and then milk the ewes in the morning before they release them. I argued with them, that there was a probability of exterminating, not only them, but the eagles, by the use of poison: It is a fact, that they prefer a piece of rancid flesh to any other; consequently, I think, that to anoint a piece of that description with arsenic or nux-vomica, they would scarcely miss eating part of it, if it were hid near roads and places where they are known to haunt. The Long Island is well freed of these destructive animals, there never having any of the species

yet appeared on these coasts. I heard some of the ship-masters of the Lewis threatening to introduce a brood, to prevent the extension of sheep-farming; it having been begun there this season on a large scale, to the expulsion of a few families. The above evil is, however, one which perseverance will greatly extenuate.

"To counterbalance this, and to encourage the sheep-farmer, the Highland countries are by no means harassed by storms of snow lying long or deep on the ground, as those on the south of Scotland and borders of England are. The country of Badenoch, however, and almost all those parts of the Grampian hills that lie to the eastward of the Garry, are exceptions to this general rule; in these countries the storms of snow are long and severe. But throughout all the rest of the Highlands, from the Mull of Cantire to the Pentland Firth, there are only a very few farms where they either have removed their sheep on this account, or are in danger of being obliged to remove. The reason is obvious:

Every country on the whole western coast, that is not really an island, is a peninsula in a greater or lesser degree; and every one knows the humid nature of the Due-Caledonian sea, and that all those glens whose openings are towards it, though at a great distance, are every day released on their lower parts from much of the snow that falls during the night. And all beyond the intended track of the Caledonian canal, the country being narrow and intersected on both sides by arms of the sea running a great way into the country, the crown, or rather back-bone of it, is never elevated to any great degree above the sea's level.

"Another inestimable quality, with respect to sheep-farming, and which is peculiar to the Highlands, is the sea-ware growing on the shores. Some will imagine, that the farms which can be thus benefited, will be few in number; but, as I said before, every country, saving a few inland districts, being either an island or a peninsula, the shores of the Highlands become thus of an incredible

extent: for, besides the principal salt-water lochs, the smaller inlets are perfectly innumerable, and a country of twenty square miles will frequently have above an hundred miles of sea-shore: and although the shores of the promontories are generally bold and rocky, the bays, small and great, never fail to terminate in slaunting or level shores, covered with sea-ware, and often in extensive and valuable sea-marshes or carses, as they are called in many places. These being always green, and strongly impregnated with salt, are uncommonly healthful and nutritious; and being rather of a purgative nature, are infallible antidotes against the rot, as well as the braxy or sickness. I look upon the possession of a part of these coasts, by the sheep-farmer, to be the strongest safe guard that he possibly can have; for in the hardest winters, which causeth the sheep to fasten best upon them, when the inland farmers are fled from home with their flocks, and in danger of losing numbers, the sheep on these coasts are frequent-

ly in the best condition. When the heather is contiguous to the shore, which seldom fails, the sheep spread outward on it while the tide is full, and, as soon as it ebbs, throng down to the shore to feed on the ware. Thus the one being of a costive, and the other of a laxative nature, while they feed on each alternately, they thrive exceedingly. And the ware being cut only once every three years, in order to be manufactured into kelp, and as it grows fastest in summer, when the sheep do not feed on it, they do it very little hurt for the manufacturer, while the manufactuer does it as little hurt for them. The sea-marsh, which keeps an everlasting verdure, is noted for being productive of large quantities of milk in the sheep or cattle that graze upon it.

" In the countries above mentioned, viz. part of Athol, the whole of Badenoch, and all the upper parts of Moray, Banff, Aberdeen, and Angus-shires, the snows lying long deep and frozen in winter, becomes a serious concern. These districts lying far

off, and hid from the mild influences and softening breezes of the Atlantic, and beside their cold exposure, being situated around the heads of long and rapid rivers, their lowest vales are elevated to a great height above the level of the sea. The Spey, after leaving Badenoch, runs in a straight line a distance of fifty miles, and following its meanders upwards of ninety, during a long track of which course it descends with great rapidity, boiling and struggling through rocks, and often falling from considerable heights; consequently, at what an amazing height the plains and meadows of Badenoch lie. Although the descent of the Dee be somewhat more gentle, yet the extensive glens and forests around it must occasionally labour under the same visitation. The head of Banffshire or Strathaven, although not so far inland as any of the others, is, I believe, as cold and as high as any of them. The waters of Lochavon, situated in the midst of a large glen of the same name, are no less than 1700 feet above

the sea's surface; yet this glen is surrounded by very high mountains, (of which the famous Cairn-gorum is one,)excellently sheltered; and, like almost every other glen in these countries, finely interspersed with wild woods.

"In this, as well as in sundry others, there is no person nor living creature attempts wintering; and the only benefit that is derived from grounds which might rear many thousands of excellent wedders, is the summering a few hundreds of cattle on the green spots in the valleys. Indeed his Grace the Duke of Gordon, from an excessive lenity, hath not only spoiled his people, but lost, in a great measure, the profits of much of his extensive possessions: but to leave particulars.

"I am not assaying to prove, that these countries are the best pastures in the world for sheep; my intent being only to show, that sheep are the most suitable stock in the world for these countries; and even these of which we are treating at present,

although more precarious than the rest of the Highlands, have some ameliorating opportunities, which the rest have not, nor indeed stand much in need of. On the respective rivers descending from these, wild extensive woods, both natural and planted, adorn almost every mountain's brow: on the intermediate spaces, which, though not large enough to admit of keeping a perpetual stock of sheep, are some of the finest wintering spots in the island, being mostly a mixture of small broom, fine heather, and flowering shrubs. These the possessors are very willing to let at a moderate rent for a few months during winter; and, in fact, there should no sheep-farmer, who occupies land in these countries to any extent, venture a full stock on his grounds without having such a wintering in view. In the head of Angus, and some parts of Perthshire, this method is already much resorted to by the cautious and experienced sheep-farmer; and although the winter should

prove fresh and open, it lightens their walks on the dead months of February and March.

"The soil and face of the country in these districts are of such a nature, that the winter will be very hard indeed, if the sheep fall much away before Candlemas; the heather being of such a good quality, and wholly mixed with salutary herbs. Besides, the projecting brows of the mountains, commonly forming semicircles, some parts of them are always swept clean of the snow by the winds, blow from what quarter they will. But in the spring quarter, owing to the dryness of the soil, coldness of the climate, and high situation of the ground, it is not capable of maintaining nearly the quantities of sheep that it will do through the rest of the year: therefore a wintering seems absolutely necessary to every farmer who would stock his grounds to the full.

"In the district of Badenoch, indeed, there seems to be very little dependence on a refuge of this nature. The country of Lochaber to the west, and those of Strath-

Errick, and the great Caledonian Glen towards the north, are already stocked with sheep; consequently have need of all their low grounds themselves, neither is there any feasible spot near them to the eastward. The face of the country of Badenoch is, however, almost peculiar to itself. On the links of the Spey there are excellent crops of natural hay, and which, by water-fleeting, might be made exorbitant, and nearly adequate to any exigency that might occur in the depth of winter; and the morasses being of great extent, and many of them low lying, would suit very well for spring pasture. It seems, then, to be the only resource of the Badenoch farmer to *stock light*, and to depend upon the product of his own farm only. The management of short-sheep * hath already made

* Short-sheep is the term vulgarly applied to distinguish the Scottish black-faced breed of sheep in opposition to the fine-woolled English breed, which are termed long-sheep; these are descriptive of their seve-

considerable progress in Badenoch; having been introduced into the upper parts of it with success, many years ago, by Mr Mitchel. There was also once a good stock of the same breed on Dalnaspidal, in the very head of Athol, on one of the most bleak and dreary situations in Scotland; a part of the farm being formed by that high ridge, called Drumochder: yet from this high situation, the stock were very seldom to remove on account of the storms in winter. From want of being properly drafted in due season, the stock on the farm is now much degenerated.

"I may mention, once for all, that the black-faced breed of sheep are the much surest stocking on any of the last mentioned countries; they being the most hardy and shifty for such a climate, let theorists say what they will. The Duke of Athol tried

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ral shapes. The former are likewise known, in some places, by the appellations of the Forest breed, and the Linton breed.

a mixture of the fine-woolled breed on Glentilt, which did thrive well enough, but he always brought them into the well sheltered parks about Blair during the spring.

"The districts of Ranoch and Bredalbine, although opening to the eastward, yet being of a westerly situation, and strongly sheltered from the cold quarters by higher hills, are very rarely visited by lying storms. Excepting a few extensive flat morasses in Sutherland, and the isle of Lewis, the rest of the Highlands are so much alike in soil, surface, and climate, advantages and disadvantages, that the general description is applicable to the whole. Of the northern pasture countries, Sky and Kintail seem entitled to the superiority.

"I know that some of the greatest and most able speculators on the subject of stocking the Highlands with sheep, have always looked upon their distance from the English markets as a great and insurmountable difficulty. That they are at a great distance from the English markets, no man

in his right senses will deny; but that they are farther off for sheep than for cattle, as few will venture to affirm. It remains, then, only for us to enquire, whether a thousand pounds worth of cattle, or a thousand pounds worth of sheep, are carried with the greatest ease and least expence to the south; which is now so well authenticated by the corresponding testimony of drovers, both from the south and north, that a minute comparison seems as needless as it would be tedious.

"Mr M'Intire, tenant in Letterewe, on the banks of Loch-mari, in the west of Ross-shire, assured me this year, that the trouble and expence of taking sheep to the southern markets was perfectly trifling, compared with that of taking cattle; for although the cattle were capable of marching longer stages, they took a far greater number of men to drive them; and that, besides costing him three times as much expences for grass as the sheep did, they were much more harassed and wasted on the

road in proportion; as they were much more destructive to the lands through which they passed. He even assured me, that it was very common, on most part of the roads, for idle people to gather out in clubs, and to waste and abuse his cattle, and quarrel with his men, as a piece of most excellent amusement; and if they could overturn or knock down a poor wearied Highlander, they would boast of it all the rest of their lives. I know from experience, that this part of Mr M'Intire's information is strictly conformable to truth; and the better protection of these men, who bring so many thousands of pounds into our country, seems well worthy of the interference of the Scottish legislature. I have known instances of drovers having been attacked for the most trifling offences by the way side, their cattle arrested by force, and confined on a bare muir or sand-bed, until they should satisfy an unreasonable demand, as an indemnification for the *great loss* sustained. The poor men, ignorant where to apply for justice, and it be-

ing hard to leave their drove in that condition, until the right is determined by the tedious jugglers of the law, are always obliged to comply, which encourageth other tygers to watch every opportunity of such a slip. Surely the drovers privileges on the high way should be searched into, and made public; and the Justices of the Peace directed to see them righted, which I can assure you many of them are slack in doing.

"Now when we are upon this subject, I cannot resist the impulse of suggesting to the Society, that a number of commons or farms, appropriated solely to the accommodation of drovers and farmers with their cattle and sheep, here and there, upon the great drove roads leading to the south, could not fail in being of the utmost utility, for ameliorating the anxiety and risk of that useful class of men while on the high way, and for the furthering and encouraging that most necessary traffic. I know that the funds of the honourable and patriotic body

of men, to whom I address this epistle, are already considerable and fast advancing: I know also, that their wish is to employ these funds, for "the lawful procuring and furthering the wealth and outward estate of themselves and others:" neither is it by theory, but by practice, that this can be accomplished; and for this purpose, I would propose the following plan to your maturer consideration. That you would employ a person of some discernment in these particulars, to purchase, or take in lease, certain spots for the purpose of resting places. Coarse land, and of some extent, would be preferable. Soft grasses being very pernicious to sheep or cattle when on a long journey; and the dung which would be lodged annually on them at the great trystes, would soon fertilize a coarse spot to a high degree; so that if it were a purchase, the Society might find their advantage in it, whilst, in the mean time, they administered the most signal advantage to an useful body of men.

"If such purchases or leases were ob-

tained, they might either be let to tenants on the express condition, that no droves were refused admittance on paying a certain prefixed sum per score, which droves should be restricted from resting longer than twenty-four hours; or otherwise the charge of the farm might be vested in a neighbouring tenant, tradesman, or cottager, who, as an equivalent for the rent, might exact a certain toll on all such droves as chose to rest there. Such a person might find his advantage in having the following emphatic inscription affixed to the wall of his house, which I have seen in the Highlands: "*Meal and Whisky sold here.*"

"No man, who was never concerned in exporting cattle or sheep from one part of the kingdom to another, can comprehend the ease and convenience resulting from such an institution. At the approach of every evening, the drover trembles to know

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* Twenty.

how his weary and fatigued men and cattle shall be accommodated during the night; which though far travelled, and worn long on the market, are nevertheless confined on the highway with dogs and staves for many successive nights. Were it not for the accumulated troubles attending the exportation of sheep and cattle, many a grazier would go north for them; who, rather than encounter the confusion, chuseth to purchase them dearer at home: and many a Highland farmer, who drives his stock to a dull or crowded market on the borders of the Highlands, would carry them on to England, rather than sell them at the reduced prices, which generally prevail on the eve of such markets. It would likewise be a great relief for tenants by the way side; the droves that now come from the Highlands being so numerous, are really become a great grievance, and in some degree justifies the farmer's severity.

"I have launched rather prematurely into this subject: but to return. Mr M'In-

tyre (than whom never man, I believe, hath had the charge of bringing more of both cattle and sheep from the north) told me, that he drove great numbers of ewes and wedders every year to Falkirk tryste, at which place you would rarely have seen a lame sheep among them. He said, he never kept an exact account how much they cost; but, as far as he could recollect, they did not cost him above a penny per sheep. The Earl of Carlisle's men told me, that they had driven sheep to his lordship from the isle of Mull, for the trifling sum of three-halfpence per sheep. It is probable, indeed, that these men employed their own shepherds; and there being no tolls in the Highlands, saving the men's maintenance, their expences are otherwise scarcely worth counting. Many a farmer charges at the rate of eighteenpence per score for cattle during the night on the coarsest muirs, who does not exact any thing for sheep.

"The accounts which I received of the expences attending the exportation of cattle,

were so various and contradictory, that I forbear mentioning them; it being now generally understood, that the exportation of grown sheep is much cheaper, and as safe and easy, as the exportation of cattle.

"But, says the speculatist, suppose all this is granted; if once the Highlands were fully stocked with sheep, what shall become of all the ewe lambs that are not necessary for replacing the aged of the several stocks? This, at first sight, hath some weight; and, without a considerable change on the face of the Highlands, may, some time or other, appear to have been an argument founded on consequences necessary and combined. I can, however, confidently affirm, that the time is yet far distant. The Highlands are not nearly in such an advanced state of being fully stocked, as many are apt to imagine. For even in those districts, where the sheep are the predominant stock, although they may be adequate to the present rents, are very far from being completely stocked: and, although they have been stocking up

these fifty years, the demand hath still increased as the stock increased; and the demand was this year greater, and the prices higher in the Highlands, than in any other place in Britain; and I really do think, after all, if we include the islands, that the Highlands are not yet half stocked. And again: the scarcity of a breeding stock makes the Highland farmer always to keep his ewes until they are too old, which is the very reason why the north country ewes sell the cheapest, while their wedders sell the dearest of any other Scots sheep. When these are considered, we certainly cannot compute the inconvenience of a stagnation of our ewe lambs, to be nearer than the space of thirty years distance. As there is always such a demand for Highland wedders to fatten on the southern pastures, there is no danger, that there shall ever be a failure in the demand for wedder lambs; I shall probably make it to appear, that there is as little danger of a failure in demand for the ewe ones.

"It is a well known fact, that the old proverb, "Scotland breeds and England feeds," cannot so well be applied as it once was; and that since the turnip husbandry was introduced into Scotland with such success, we can outsell the English in their own markets for fat sheep. I am also informed, by some old drovers, that it is their opinion, there are ten lambs sold in Edinburgh market, for every one that was sold when they first frequented it, at which time they were selling at from two to two and sixpence per lamb. May it not as well be presumed, that ere the time shall arrive, when the Highlands are completely stocked with sheep, the large and populous country along the eastern coast of Scotland, in which there are such a number of flourishing towns and villages, may be adequate to the consumption of the overplus of the lambs, necessary for recruiting the live stock of the Highlands? From past observations, it is evident, that a general stocking with sheep, influences particularly two articles of the

very utmost importance to this country; I mean the turnip husbandry, and the woollen manufactories; and thus drawing the population of the country unto those places, which are fitted for bearing and maintaining the population; and divesting the wild inhospitable glens and islands of a burden, which nature never intended they should bear. Where thousands of hardy people exist, doing no good either to themselves or others, but merely in order to preserve a wretched existence, contending with the elements to force crops, which wise heaven hath denied to these climates; and where it can hardly be said, that they even maintain the appearance of civilized life. It is preposterous, even at this time, to affirm, that there is no demand for lamb in the large towns on the east of Scotland. How can there be a consumpt of lambs where there are no lambs to consume? They being all bought so dear for stocking, that were they bought at the same price for slaughter, their flesh would far exceed in

price every other article of food; and it is vain to suppose, that a great quantity of lamb or mutton will sell above the price of other articles of diet. I know, that the butchers of Perth, notwithstanding its favourable situation, are, during a great part of the year, unable to procure mutton and lamb at a reasonable rate, adequate to the demands of the inhabitants and neighbourhood.

"But dropping all these arguments at once, and supposing that the towns on the eastern coast, notwithstanding of their advancing population, trade, and manufactures, should even fail to shed riches and luxury in their respective neighbourhoods; and supposing every suitable farm throughout the whole Highlands, completely stocked with sheep at this very time; still there are resources enough, and which are almost in every farmer's power. Let him kill a few of the smallest, or worst-favoured of his lambs, and keep all the others of his flock; and still he hath two different experiments left in

his option, which he may reject or practise as the times suiteth. He may either draft his hoggs in June, and drive what he can spare of them to the southern markets for rough sheep; or otherwise, if he chuseth to sell off his ewes when they are rising five years of age, it enables him always to keep the whole, both lambs and hoggs. This is no vagary nor impracticable plan; it hath been followed by Sir John Sinclair ever since he began to rear the Cheviot breed on such a large scale; finding that he could not come near the border prices for his fine lambs in Caithness, he kept them, and sent off his ewes to the southern markets as fast as they reached their prime; and I have seen them cross the border so mighty and little fatigued, that on penning them in a fold, where our sheep would never have attempted breaking, they would have leapt the fence every one, and been feeding on the hills at their will next morning. And unless it be on farms where the braxy is very destructive, I will maintain, that the

Highland farmer shall find this mode better calculated for the country than the present one, of keeping the ewes as long as they are fit for breeding, when, on selling them in autumn, they fetch him only a trifle.

"However, as the farmer, by this mode, loseth the best year of his ewes, I would rather approve of the following; which, on bringing a stock into a proper rotation, becomes the most easy and regular plan that can be adopted. For an instance, we shall suppose a farm to keep a thousand of a breeding stock; and is there any difficulty, or disproportion, in keeping one fifth of these lambs, or hoggs, for they are both these in the same year; and then his stock will consist of, two hundred hoggs, two hundred gimmers, with the same number of three-year-olds, four-year-olds, and five-year-olds? Thus he hath always a head, or age, of his ewes to sell off when rising six years of age; a proper and suitable time to sell them, when they will bring him a price little short of wedders. Out of the above stock, it will

be very fair, if he have seven hundred lambs, one half of which are males, still he hath three hundred and fifty; but ere the small ones be killed for the use of the family, and the loss during winter extracted, he cannot be supposed to have above three hundred in June following, when he can draft one third of them for sale: they will then drive to the south with the greatest ease; and if the sale of hoggs be dull at that season, he may keep them occasionally, and sell an hundred of his next head of ewes on the autumn following.

"It can only be objected to this, that such shoals of ewes and hoggs coming annually from the north, will overstock our markets, and cause a stagnation, which may be attended with ruinous consequences to many. This hath always been surmised; but the result hath been very different from the conjecture. How many thousands of wedders come now from the Highlands, where not very long ago there was no such thing? And still the demand hath increa-

sed, in more than equal proportion. The cause is obvious: The great improvements now carried on by cropping with turnips and artificial grasses, causeth a proportionally greater demand for live stock; and the pastures which are yet used for fattening the Highland cattle, will be open for their successors, the sheep.

"Thus, I think, if my arguments are admitted, I have proved beyond a doubt, that sheep are the most eligible stock for the greatest part of the Highlands; for the proprietor and farmer, they certainly are so. In a political point of view, however, the scheme must certainly be prosecuted with leisure, caution, and tenderness; nor must we drive the people from their poor, but native huts and glens, until some other source of industry is opened to them, which, by persevering in, they may become more useful members of the commonwealth.

"I know that it is argued by some, that the product of sheep, with one cow or two, is as capable of maintaining a family as

that of cattle. These maintain, that the making of the wool into yarn, furnisheth employment for the females at seasons when they would otherwise be idle; thus keeping up a continual, though small, influx of money into the family. This seems reasonable: but facts are stubborn proofs; and it must be acknowledged, that in every district already stocked with sheep, in proportion as they advanced, the people have been by degrees expelled, and America hath been the resort and grave of too too many of them.

"It will most readily be asked; what shall be done to accommodate them at home?

"My Lords and Gentlemen,—There seems to me to be but one method, which, if executed on a liberal and extensive plan, I will pawn my life, shall be successful. It is that of GRANTING FEUS.

"And certainly it is to you, that we must look for the accomplishment of this great national object: an object every way wor-

thy of you; and which may be extended on a good footing, without being materially detrimental to your funds. There are many circumstances, wherein even an individual can be of great service to numbers, without injuring himself: how much more, then, is it in the power of your body to accomplish, with whom all the power and interest of the north is conjoined and concerned? And, although the Society is yet in its infancy, the encouragement held out by you to perseverance and industry, is already beginning to give life and vigour to sundry beneficial undertakings; and I anticipate, with joy, the approaching period, when you shall be more at the helm of Scottish manufactures, fisheries, and rural affairs, than any branch of our legislature; and when you shall have more influence thereon, than all our members at the British Parliament.

"Although, in my peregrination through the north, I apprehended I met with sundry spots, excellently adapted for the purpose of feuing; yet, as these may not be attaina-

ble, and as there certainly are enough attainable, it is needless to point them out; but there are large fields of red loam, in almost every place adjacent to the eastern coast, and some too on the west and inland districts. These, though accessible to the plough with the greatest ease, and in the immediate neighbourhood of limestone and other manures; yet, from the barren appearance which they exhibit in their natural state, are strangely neglected. These are sometimes covered with a thin scurf of moss, and sometimes they are not; but wherever this soil abounds, it is certainly a spot calculated for this purpose; because improvement will make it an excellent soil, and it can be afforded at a small rent. After the soil which the Highlander is employed in tilling at present, no soil upon earth will daunt him. And let him live but his own way, in the stile that he was brought up in; let him have a prospect of a little milk, and a crop of potatoes; and no man under heaven will do more, and suffer more

to make ends meet than he will. Besides you will find it an invariable rule, that the greater number of people there are upon a flat arable country, the better will the land be, and the more rents will be paid; while it is the very reverse on a hilly pasture country.

" Before entering farther on this subject, as the parson says, we shall pause a little, and endeavour to give some idea of the manners and customs of the native Highlanders. Of the lower order of people I mean; for they are actually divided into two distinct classes, I had almost said species of people. Those of the first order, are certainly the best educated, the most polite, and the most genteel people that inhabit any country under the British dominions; whilst the other are the most homely and vulgar, both in their persons, manners, and way of living, that the fancy can well conceive. They are, however, possessed of passions and affections, strong and warm; are true to one another; passive to

their superiors; but often guilty of dissimulation and insincerity to strangers.

"This seemed to me to be their general character; but, in point of temperance and patience under labour, there is certainly a very great difference betwixt the inhabitants of the inland glens, and those on the coasts and islands; the latter being greatly superior in these particulars. I remember reading, how Dr Johnson asked one of the ministers of Skye, "Who were the most barbarous clans in the Highlands?" He answered, that "they were those bordering upon the Lowlands." This asseveration the Doctor treated as absurd, and occasioned by prejudice. I am convinced, however, that Mr M'Queen was perfectly right: at least it appeared to me, that the inhabitants on the western coast and Hebrides, were the most indefatigable, and the most abstemious, people that I ever saw in my life; whilst those of the interior, on the contrary, were much given to idleness, tippling, and lying. They all take a concern in the brewing of whisky,

and still a deeper concern in the drinking of it; and I was a witness, not to my profit, of some very good specimens of their activity in taking possession of what was not their own. Of this description, the Duke of Gordon's people are none of the best; the same may be said of their neighbours on the eastern parts of the Grampian Hills, and of sundry of the glens in the interior of Ross-shire and Sutherland; and indeed wherever the brewing of whisky is winked at. There being rarely such a thing attempted in the Hebrides, or on the western coast, is certainly productive of the superior industry and morals visible in the inhabitants.

"There is another thing observable in the Highlanders, which really appears paradoxical. Wherever the small tenants have been indulged with leases of their land at the old rents, there they are as poor as ever; but where the rents were raised, nay screwed up a while ago, many of the tenants have made considerable fortunes. It

is their custom to enter into matrimony when very young, consequently they have large families, and the species thus multiplies uncommonly fast. In the former case, where they got their farms at the old rents, they never having had any riches saving their cattle, and if they had a prospect of supporting life, it was all that they looked for. Thus, the times growing better, enabled them to keep their children still in the families, often nearly idle; and when they married, the farm and cattle were portioned out among them. They were again subdivided to the children of these, and the marches were grown so intricate, that without a long residence on the spot, it was impossible to distinguish the rights of each family; and I often found glens so overstocked, that I was astonished how such numbers of people could find means to support themselves, even though they had paid no rent whatever; the huge mountains around them being quite waste, saving a few cattle straggling on the green spots by the sides of the

rivers and streams. On visiting sundry of the glens, I could not help borrowing a proverb from the old one, "No money no Swiss," mine was, "No haughs no Highlandmen." In sundry of these, which would have formed fine sheep walks, I found no living creature saving wild beasts. Such were Glen-Avon, Glen-Orre, and Monar.

"In the latter case, again, those whose farms were raised, found it necessary to dismiss their children to service, to the sea, or to the army; where, beside the chance which they had of earning something, those at home finding they must strain every nerve to raise the rent, necessity found means at first barely to do it, but the times mending, they began to find, that these means produced a little overplus. This they were careful to lay by to answer emergencies; but happily the great rise in the price of cattle, hath enabled them still to add to their little store; and many that I saw of a most wretched appearance, would have a score or two of pounds lodged in good

hands, while their children were serving their king, or their masters, with credit and ability. And what I thought extremely praise-worthy; in such an abstemious way are they brought up when young, that I actually met with some men, who had saved a competency adequate to every exigency of life in their native country, merely from their pay as privates in the army.

"Such, then, are the outlines of the people's characters, for whom you are to provide an asylum. They are the hardiest watermen in the world; and, though drenched in brine, will plunge through the waves in open boats with the greatest unconcern. They are so inured to want, that many of them know not on one day what they are to live on to-morrow. Those of them who have the manufacturing of the kelp taken by the ton, will persevere night and day when the tide is out; and you will scarcely know what many of them subsist upon. They are patient of labour, and will till ground with the crooked spade, and raise

crops where no other men would attempt it. They are submissive and obsequious to their superiors to the last degree; and though extremely ignorant, are, nevertheless, possessed of good natural parts. They are brave, jealous, and resentful; and indeed most of their vices, or rather failings, seem to be founded on latent virtues. Surely such men might be made useful members of society: but what is their use at present?

"When conversing with the tacksmen and clergymen residing amongst them, who certainly are the best judges of the people's temper and disposition, some of them mentioned one plan, and some another, as the most effectual for keeping the people from choice in their own country. A few of these were: Further encouragement to prosecute the fisheries, with the duty being entirely taken off the salt carried coastwise into the fishing districts. Others, and not a few, were for the most unreasonable plan of all, namely, that they should continue at the expence of the proprietors, and have their

leases extended at the old rents, and that such proprietors should rather be favoured with a repeal of certain taxations and public burdens.

" Most of them viewed the great public works set on foot in the Highlands this year as but a temporary and unequal resource; stating, that they were only suitable for single men, and that few who had families at any distance would be persuaded to engage in them. They added, that crops, milk, and fish, were always more the object of the Highlander's pursuit than money; that in attaining the former, every individual of the family lent a hand, but that whilst the head of the family was absent at the roads, the rest were idle; and that supposing he were possessed of a little money, there were many seasons of the year when he could not have it exchanged for the necessaries of life.

" They all agreed, that there was no cause for being alarmed at the spreading of the sheep, on account of the emigrations;

it being a circumstance which must necessarily take place at certain periods, to some place or another, whether the country were stocked with or not, owing to the glens and islands being already overstocked, and the people being so prolific; and that the remainers looked on it as a great relief. But I never mentioned the scheme of feuing to one of them, neither rich nor poor, who did not acquiesce in its efficacy with enthusiasm; nor were they slack in expatiating on the happy effects which would result from it. They assured me, that if the native Highlanders had the offer of a permanent residence in their own country, a residence where they might lead the same manner of life, and pursue the same avocations which they had been used to, they would prefer it to all other things. And they added, that, when once they were collected into bodies, such places would naturally become a centre for the barter and exchange necessary in every country; and the want of which is, in many instances, severely felt;

and that till once they were collected into bodies, they never would be able to prosecute the fisheries on a scale of any extent; but that their southern neighbours would still reap the profits of that valuable branch at their doors.

"They stated likewise, that many of their children entering into manufactures, would return and set up business in their native village; which, in the woollen line, can be carried on by individuals much to their advantage, and that of the country around them: all of which things are not only possible, but very probable.

"It would be presumption in me to suggest the very places, or the very plan, where, and how, these feus ought to be set on foot. The large uncultivated muirs adjacent to the eastern coast, are in many places uncommonly adapted, as are some places on the isles; but it certainly would be of utility, to draw as large a population as possible into the vales of Glen-more-na-h'-alabin, on the sides of the great canal, and to

have markets established there, corresponding with the great trystes on the line of the Forth and Clyde; and there is one spot particularly on the south-east side of the river Lochy, belonging to the Duke of Gordon, that might accommodate a great number of families; it being a necessary appendage, that a head-room of some extent be annexed for the accommodation of their cattle, the value of this spot hath never yet been known.

"As to the scheme itself, it should be on the most liberal plan. Every man should be accommodated with a part proportionable to his abilities, not exceeding a certain value. An overseer should be appointed to see them all ditched, hedged, and tilled properly. A lease of nine years or so, should be granted them at first to settle themselves; and according to the dimensions of the houses which they had built on the premises at the end of that term, their leases should be extended from fifty to eighty years. Such members of the Society as are

in possession of the lands which may be pitched on, will surely give them up to the Society, either by the way of purchase, or lease, for such a beneficial end.

"With respect to the proprietors of Highland estates, who wish to let their land for sheep-grazing, I would recommend the perusal of the following hints: I think it is hard, that the adventurer should be obliged to pay the whole of the first year's rent at the term of Martinmas first following his entry to the farm. It is a custom very discouraging to south country farmers, who are not used to it in their own country. With respect to the substantial farmers of the south, the Highlands is somewhat similar to a profession of religion; they betake themselves to it when every thing else fails them; consequently a great many of those who take lands in the north are younger sons, and men rather of circumscribed fortunes; and being obliged to pay the first year's rent, and a good part of the second, from off his capital, if his credit survive this, it

incapacitates him for laying on a stock sufficient to make the best of the lands. As such men will prove often the best of farmers when indulged, would it not be better to suffer them to make something of the land, before they were obliged to pay any rent? The Honourable Lord Seaforth, when laying his excellent grazings of Glenshiel under sheep, encouraged his tenants by this indulgence; the happy effects of which were soon seen in the farmers stocks, and in giving his lands the character which they so justly deserve; and there is every reason to expect, that, on the expiry of the present lease, they will let as high, if not higher, than those of his neighbours in Glengary and Glen-Elg. The former of these, Macdonald of Glengary, gave his original sheep-farmers two or three years respite from paying rent, and what an enormous value hath he now raised his lands unto!

"But again: as such lands cannot be expected to let at their full value on the first experiment, I see no reasons why the pro-

prietors should be obliged to let their lands on such long leases without some consideration. The value of money hath continued to decrease ever since the commencement of our annals; nor is there the smallest doubt, that, perplexed at times with small fluctuations, the same series of diminution will continue, if not a still more rapid one. The most of our writers on this subject seem all to have taken their ideas from the circumstances attending the leases granted to farmers on arable ground, which is quite a different thing; no farmer can be expected to bring arable land into a proper heart without a long lease; but where are the expences attending pasture lands? Consequently, I think they should grant the farmers as long leases as they desired, with a freedom to give it up every seventh year; but with the express condition, that they should pay twenty per cent. of advanced rent for the next seven years if they retained it, which, if they refused to do, the laird was at liberty to conclude a

new bargain, either with them, or with any other person.

"This plan seems well calculated for keeping both parties safe; the farmer from being ruined by any unforeseen revolution, and the proprietor from losing half the product of his lands, by such a rapid decrease in the value of money as the nation hath experienced these some years past.

"To the sheep-farmer I must only observe, that, if it is not quite inconvenient, he will do better to suffer his sheep to feed mixed, than to keep the young ones by themselves; and, that he take particular care that his flocks are not heated, as the half of the diseases to which they are subject proceeds from nothing else, and that they be careful to have them frequently recruited by a proper breed of rams from the south. Even the black-faced sheep are not the natives of the Highland hills, and the Cheviot breed are still farther removed from it; and both kinds, but especially the latter, soon degenerate in size, strength,

and wool, if not timeously recruited by a proper breed of rams.

"This is a subject in which I feel my mind so deeply interested, that I could write on it for ever; but I see I must draw to a conclusion, for my paper is exhausted, my time gone, and I am but multiplying words without wisdom. Perhaps you will say, I have not been decisive respecting the parts and proportion of the Highlands suitable for retaining stocks of black-cattle upon. To enumerate these, would be a difficult task, and so intricate as to be unintelligible; but I have already laid it down as a rule, that where one fourth, or at least one fifth of a farm is not arable and meadow, cattle are neither the most suitable nor the most profitable stock, and the farmer will find his advantage in the change; and where a farm is partly arable and partly pasture, black cattle should only be kept in proportional conformity to the above. It is an ill concerted argument, which many go upon, that sheep must weaken

the strength of the nation, and gradually eradicate the human species. When applied to a few mountainous districts, quite inadequate to the maintaining of a numerous population, this is undeniable; but when taken in a national point of view, it is ill founded and absurd; else, why are such numbers of our neighbours enriched by the manufacturing of Scottish wool? And why does Scotland yet expend such large sums for cloth made of her own wool? Is it because the people of this country are incapable of succeeding in that branch? Or, is it for want of hands to be employed in it? Or, is it not rather, that the enterprising spirit of the people is, by such as have the leading thereof, directed to more unprofitable pursuits?

"I maintain, then, that it requires only a change of situation, a simple adherence to the dictates of reason in placing the population, and a few efforts to open the people's eyes to their own advantage, to arrange the affairs of the nation in such a

manner, that the sheep system shall prove conducive to the employing of one half more people than the cattle-farming, and to better advantage. The cattle hold people employed a great part of the year in procuring for them that food which the sheep procure for themselves; being endowed by nature with sagacity and powers sufficient to remove, with ease, the snow which covers the ground, while the cattle must starve or be fed with the hand. And I shall leave it to you, or any thinking person, to judge, whether people are most profitably employed in manufacturing our wool, or in forcing crops on untoward soils, and raising and winnowing hay. In the latter case, the whole profits or hopes of it are concentered in the bodies of the animals; whereas the sheep-farmer can afford to pay triple rents from the bodies of his animals, and still a prodigous source of wealth and industry, flowing from thence, is opened to every one who will engage in it.

"But as this would lead me into a tedious argument, I shall finish with this conclusion: That it is your interest, and the interest of the nation at large, which two are inseparable, to stock your mountains with sheep, and your valleys with men and cattle;—with men who are capable of manufacturing the wool of these sheep into cloth, and thereby tripling the already great sums received annually for the raw material;—with men ready and able to avail themselves of the inestimable sources of wealth, conveyed yearly to their shores in immense shoals of fishes;—with men who will defend their native mountains, though the world combine in arms against them. It is thus, and thus only, that the real value of the Highlands of Scotland shall ever be thoroughly known, when, like a well finished machine, one wheel always sets another in motion.

"I have thus endeavoured, in as few words as possibly I could, to elucidate some of the most striking features of this great

national object. The facts which I have stated, and amendments I have proposed, were taken from an actual survey, or from information gained on the spot; nor have I advanced any thing which I do not wish every Highlandman to peruse and discuss."

APPENDIX.

THE following Tables, and letter on sheep, were put into my hands by General Dirom of Mount-Annan, to whom they were communicated by the late ingenious Mr Malcolm, tenant of Burnfoot.

In the Tables may be seen, at one view, the gradual rise of sheep and wool, from 1750 to 1795; as well as the profits arising from every sheep on so many farms at an average; and we have thus a short and accurate history of the effects of different seasons, and different political views, peace, war, &c. upon the rural economy and manufactures of this country.

From 1796, the last in Mr Malcolm's tables, though the prices of sheep have been continually fluctuating, yet the average price of each two years has been nearly the same. Since that period, I have seen the last lambs on the same farms sold at fifteen shillings, and at the half of that sum on other seasons. The wool has been always advancing, and the average price in that country last year (1806) was 1l. 12s.

In the letter, though some of the observations may be thought trite, yet it being the production of a man of so much experience and accuracy of observation, I could not think of curtailing it. The whole are printed from his own manuscript, without the alteration of a word.

An Account of the Prices of top Wether Lambs, Ewes, and Wool, Burnfoot Farm, from 1750 to 1796 inclusive.

		s.	d.
1750	Lambs,	2	7
	Ewes,	5	5
	Wool,	6	2
1751	Lambs,	2	7
	Ewes,	4	5
	Wool,	7	0
1752	Lambs,	2	6
	Ewes,	4	1
	Wool,	6	0
1753	Lambs,	3	1
	Ewes,	5	3
	Wool,	5	6
1754	Lambs,	3	9
	Ewes,	5	3
	Wool,	6	0
1755	Lambs,	3	1
	Ewes,	5	3
	Wool,	6	0
1756	Lambs,	2	10
	Ewes,	5	9
	Wool,	6	0
1757	Lambs,	3	2
	Ewes,	6	2
	Wool,	6	0
1758	Lambs,	3	6
	Ewes,	6	11
	Wool,	6	8
1759	Lambs,	3	10
	Ewes,	6	11
	Wool,	8	4
1760	Lambs,	3	2
	Ewes,	6	8
	Wool,	8	4
1761	Lambs,	2	6
	Ewes,	5	9
	Wool,	6	0

		s.	d.
1762	Lambs,	2	3
	Ewes,	4	9
	Wool,	5	3
1763	Lambs,	2	9
	Ewes,	5	3
	Wool,	6	0
1764	Lambs,	3	7
	Ewes,	6	8
	Wool,	6	6
1765	Lambs,	3	9
	Ewes,	7	7
	Wool,	7	0
1766	Lambs,	4	2
	Ewes,	10	0
	Wool,	7	0
1767	Lambs,	4	6
	Ewes,	8	7
	Wool,	7	0
1768	Lambs,	3	1
	Ewes,	7	2
	Wool,	6	8
1769	Lambs,	3	7
	Ewes,	7	4
	Wool,	7	0
1770	Lambs,	4	5
	Ewes,	6	8
	Wool,	6	8
1771	Lambs,	4	7
	Ewes,	7	8
	Wool,	7	2
1772	Lambs,	5	0
	Ewes,	9	3
	Wool,	8	2
1773	Lambs,	5	0
	Ewes,	9	6
	Wool,	7	6
1774	Lambs,	4	10
	Ewes,	9	2
	Wool,	7	9
1775	Lambs,	4	3
	Ewes,	9	0
	Wool,	8	0
1776	Lambs,	3	9
	Ewes,	9	0
	Wool,	8	9
1777	Lambs,	4	8
	Ewes,	9	0
	Wool,	8	9
1778	Lambs,	3	6
	Ewes,	8	2
	Wool,	6	10
1779	Lambs,	2	7
	Ewes,	6	2
	Wool,	5	0
1780	Lambs,	2	10
	Ewes,	6	6
	Wool,	5	9
1781	Lambs,	3	3
	Ewes,	5	8
	Wool,	6	0

		s.	d.
1782	Lambs,	3	10
	Ewes,	6	5
	Wool,	7	4
1783	Lambs,	4	3
	Ewes,	7	7
	Wool,	8	4
1784	Lambs,	6	0
	Ewes,	8	6
	Wool,	9	0
1785	Lambs,	5	9
	Ewes,	8	6
	Wool,	9	9
1786	Lambs,	5	4
	Ewes,	9	4
	Wool,	9	9
1787	Lambs,	5	8
	Ewes,	11	0
	Wool,	11	8
1788	Lambs,	5	11
	Ewes,	12	0
	Wool,	12	0
1789	Lambs,	5	3
	Ewes,	10	6
	Wool,	12	6
1790	Lambs,	5	0
	Ewes,	9	6
	Wool,	13	6
1791	Lambs,	4	3
	Ewes,	8	7
	Wool,	14	6
1792	Lambs,	5	6
	Ewes,	9	0
	Wool,	17	0
1793	Lambs,	4	7
	Ewes,	7	6
	Wool,	14	6
1794	Lambs,	5	4
	Ewes,	8	6
	Wool,	14	0
1795	Lambs,	6	10
	Ewes,	12	6
	Wool,	18	2
1796	Lambs,	8	3
	Ewes,	15	0
	Wool,	23	4

In 1796 some lambs were sold at 9s.

An Account, shewing the produce of one Sheep on the Farms of Burnfoot and Douglan, from 1756 *to* 1796; *of Eurslees and Byrecleughwater,* 1764 *to* 1781, *(being the period I possessed them); of Craig,* 1773 *to* 1788, *(being also the period I possessed it); and of Hegell, from* 1756 *to* 1796.

	Burnfoot and Douglan.		Hegell.		Eurslees and Byrecleugh-water.		Craig.	
	s.	d.	s.	d.	s.	d.	s.	d.
1756	2	6½	2	11				
1757	2	3½	2	8				
1758	3	3	3	3				
1759	3	9	3	3				
1760	3	5	2	11				
1761	2	2½	2	1				
1762	2	2½	2	2				
1763	2	6½	2	9	2	0		
1764	3	2	2	11	2	6		
1765	3	0	3	8½	2	11½		
1766	3	11	4	3	3	6		
1767	3	6	3	5	3	8		
1768	3	2	4	3	2	6		
1769	3	2	3	0	2	6		
1770	2	8½	2	11	2	6		
1771	3	2	3	0½	2	8		
1772	3	9	3	6	2	7½		
1773	3	9	4	6	3	6½		
1774	3	6	3	4½	3	8	3	4
1775	4	4	3	3½	3	5	4	1
1776	3	8	3	9	3	4½	2	10
1777	3	7	3	2	2	5½	2	10
1778	3	0	2	8	2	8½	2	9½
1779	2	3	2	3	1	11½	2	4
1780	2	4½	2	4	1	11	2	3

	Burnfoot and Douglan.	Hegell.	Larrlees and Byrecleugh-water.	Craig.
	s. d.	s. d.		s. d.
1781	2 4	2 4		2 3
1782	2 8	2 10		2 9
1783	3 2	3 4		3 9
1784	3 5	3 4		3 6
1785	4 2	4 2		3 11
1786	4 1½	3 7		3 9
1787	5 2	5 4		5 0
1788	5 1	5 6		
1789	5 1	4 10		
1790	4 11	4 10		
1791	4 8	4 6		
1792	5 3	5 9		
1793	4 3	4 1		
1794	6 1	6 0		
1795	6 1	6 0		
1796	7 10 *	9 4		
1797	5 8	5 11		
1798	6 0	5 2		
1799	6 0	5 10		
1800	6 0	5 10		
1801	9 6	10 0		

You will observe a considerable variation on the produce the same year. This is owing to more loss happening in one farm than in the other farms. It also sometimes happens, that more ewes are sold off one year than another, owing to the stock requiring a greater draught.

* The great difference was owing to an extraordinary death of hoggs in Burnfoot.

"SIR,

"As your almost unequalled patriotic zeal for the good of your country, has made you turn your attention, among other things, to the improvement of sheep in Scotland, principally with a view to meliorate the wool, I am convinced, that all information on that subject will be acceptable to you, though much of it may be little to the purpose. I am one of the Duke of Buccleuch's farmers in Eskdale. If any of the following observations on farming with sheep shall be in any respect worthy your approbation, I have to ask the favour that my name may not be mentioned, nor any public notice taken of what I write. Give me leave to say, it is upon this condition I take the liberty of writing this letter to you. Farming has been part of my business through life; I am now an old man, and have retired from the world.

"There are many different kinds of grass which grow on hills, which afford food for sheep in different seasons. There is a considerable quantity of moss soil on most hills: this soil produces heath, ling, moss, and deer-hair: sheep eat heath, or heather as we call it, from the beginning of summer to Candlemas; they only like it when it is young; it is frequently burnt in the spring. Ling grows all the year, and is excellent food for sheep: they do not crop it with their teeth, but draw out the root along with the stalk. Moss begins to grow in February; sheep eat it in the same manner they do ling. Deer-hair grows about the end of April, and is eat

through summer. Sheep could not be well maintained on the hills without these grasses, because the lay grass does not come sooner than the first of April. Where a farm does not produce all, or most part, of the above grasses, but only lay, the sheep for the most part are very low in the spring, and many of them die of poverty if they have suffered a hard winter.

"There is a great quantity of bog, or marshy land, on some hills. It is not much eat in summer by sheep, but it is of great use to them in winter. It is a great improvement to drain those bogs; it makes the grass wholesome, increases its quantity, and makes it eatable in frosts when they are one sheet of ice in a natural state. It is proper to mow these bogs every third year; when they are not mowed, they grow up into little hillocks, which sheep will scarce touch. They produce good hay for sheep and black cattle, and draining makes a great improvement on it. A proper proportion of all the different kinds of grass I have mentioned, makes the most complete sheep-farm; but such a farm is difficult to be got. It is a great advantage to have moss-land on the low parts of a farm, because sheep can have easy access to it in every kind of weather. Where that soil is only on the tops of hills, it is very convenient when they are neither high nor steep, because sheep, particularly young ones, find great difficulty in getting to it, when they are in low condition in the spring; and besides, the influence of the frosts continues longer, which prevents the ling and moss from

springing, by binding the ground. It is a great advantage to have a farm well sheltered from the winds, particularly from the cold points. It is very convenient to have stone march dykes, but it is impossible that the farmers can generally be at the expence of them; it is an improvement well worth being done by the proprietor, and no sensible tenant will refuse to pay interest. Where there are no march dykes, marches ought to be on the waterfalls, that is, on the summits of the hills. Where burns are marches, two flocks will not feed with ease together. It is still worse when a march is along the side of a hill.

"There are several farms in Eskdale which will maintain a sheep on an acre, most of them will take between one and two acres, and some two acres and rather more. They are not the worst farms which take most to maintain a sheep; they only have a great quantity of moss soil, which, though very fit to raise sheep to a good size, yet it requires a much greater quantity.

"Through all Scotland sheep are only divided into two different kinds, which are called the short and the long. It is a question among farmers, whether long sheep will answer every ground; I am of opinion that they will: They have the best kind of long sheep on and near the Cheviot hills, which are as cold and stormy as any in Scotland. There has long been a dispute, before the long sheep wool rose to its present high price, which of the two kinds were most profitable; the long dinmont and weather in general sell high-

est, as also the ewe and lamb. The advocates for the short sheep allege, that they take less pasture; but I doubt the fact, from the opinion of one of the most sensible farmers I ever knew, who stocked with both kinds, and who was at first prejudiced in favour of the short sheep; he affirmed, that they eat as much as the long sheep. A short hogg of character will generally sell above the price of a long hogg, because they have a much more extensive market for them. They will buy no other hoggs through all the dales of Yorkshire, for the other commons in England, and for the Highlands of Scotland: I am of opinion, that they have only the superiority in the sale of the hogg; and on account of the above great consumpt, the produce of short sheep on most farms in Tweeddale, Annandale, and Nithesdale, is hoggs. They have a great advantage over us in breeding hoggs; they live as well as their old sheep; whereas, for the most part, from a fifth to a fourth of our ewes die. Hoggs should be bred on a land where there is a good quantity of heath and spring ground, that is, moss and ling; dry ground, which has a good proportion of lay, and which is well sheltered from the north and east, is most suitable for ewes; cold, wet, and high grounds, suit dinmonts and weathers best, because they can bear the greatest hardship. This makes it convenient sometimes to have more farms than one, which suit the different sheep, hoggs, ewes, and weathers. It must be a just opinion, that the farm which produces most, must be

of most use to the community, provided, that it does not diminish the number of inhabitants: I am convinced, from experience, that a farmer who possesses what is called led farms, can make more of them together than if they were separate; and I believe it is a fact, that the number of people are not diminished by it. Though grazing appears to be a much more simple business than tillage, from having far less detail in it, yet it is as difficult to understand; the errors in the one are attended with much worse consequences than those of the other; therefore it is necessary they should be more guarded against. Within these twenty years, great improvements have been made in sheep-farming, and there is still much to be learnt. It is only men who can throw aside old prejudices, and who have capitals, who can undertake improvements of any kind. If farms are divided and curtailed without distinction, no enterprising man will choose to follow the business. I am of opinion, that a landlord ought not to lay down to himself any fixed rules, with regard to the extent of his farms, and that it is his interest to give a farmer, who excels in his business, all encouragement. I am of opinion, that where the pasture answers a ewe stock, whose produce is lambs and old ewes, it is the most profitable, especially when the demand is good; when sheep are at a low price, weathers sell better in proportion, because there is a more extensive market for them: we sell our ewes and lambs mostly into Northumberland and Yorkshire, and of late a considerable number

are disposed of in Scotland: weather-sheep are sold chiefly in Yorkshire and farther south.

"The diseases to which sheep are liable are many; I shall only mention some of the most mortal. The rot carries off the greatest numbers: We attribute it to three causes; hunger, wet seasons in the months of September and October, and new laid out ground which has been scourged with crops. When we have long storms in winter, and no hay given, they are very apt to be infected with the rot; draining has the best effect in preventing this disease. It is much the interest of farmers not to overstock. It is one of the best preventatives against this disease, and always makes a great addition to the value of the produce. There is a disease called the sickness, to which hoggs chiefly are liable; it attacks them from about Martinmas to the spring; it swells them much, and they are costive; hoggs which feed on turnips are not subject to it, because that food keeps their bodies open. There is one other disease which is very mortal, and which we call the louping ill: It seems to be a kind of palsy, as they lose the power of their limbs: It prevails from about the beginning of April to the end of May; hoggs are most subject to it. There are many other diseases, but not so general as those mentioned.

"Salving of sheep is universally practised in this country; we find, after repeated trials, that they cannot go white as many flocks do in the east border; when white, they do not keep their wool, and begin not to thrive.

The great use of tar is to kill the vermin, with which sheep are much infested: It is necessary to make the divisions narrow in salving; when they are wide, all the vermin lodge where the tar does not reach, which is very apt to scab the sheep. The more butter which is mixed with tar, the better the wool will be. It enables the manufacturer to wash out the tar in a great measure. In the east of Tiviotdale, some of the farmers mix 40 English pounds of butter with 16 quarts of tar. The common quantity in this country is only 24 lb. Sheep do not agree with being much disturbed, therefore a shepherd ought to use his dog with much caution: the great art of herding is to eat the ground properly: it requires both much attention and skill to lodge the flock at night in such places as will afford them the best shelter: a shepherd ought not to have under his care above 800 sheep at most.

" In this part of the country we have much improved, and are still improving, our wool, by bringing east border tups. Some think we are making our breed too fine for our pasture; I am not of that opinion. No doubt we ought to go on with caution; for it is a just maxim, that a farmer's stock should rather be below the quality of his pasture than above it. At present, wool is a very great object to us; but it ought only to be improved so far as is consistent with the good of the sheep, that is, the carcase ought to be our first consideration. I am glad to hear the Spanish breed has done so well in the east border; but that is not enough.

to encourage a farmer to bring his sheep into that kind, until we are certain that it will not hurt the sale. The opinions of the persons who buy from us, must regulate our stocks; and I should suspect, that it will take a considerable time before they would be reconciled to almost a total change of breed. I have much reason to ask your pardon, for presuming to write to you so long a letter. What I have said on the subject are only common place observations, which are well known to all sheep farmers; but perhaps some of them may be new to you, and not unacceptable."

July 1. 1792.

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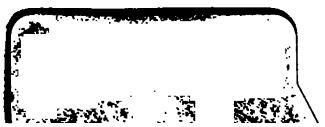
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